UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2003/01253

June 28, 2004

Stanley Speaks
Northwest Regional Director
Bureau of Indian Affairs
911 N.E. 11th Avenue
Portland, Oregon 97232

Re: Endangered Species Act Section 7 Formal Conference and Magnuson-Stevens Fishery and Conservation Management Act Essential Fish Habitat Consultation for the 2003-2010 Multi-Year Harvest Plan of the Confederated Tribes of the Siletz Indians, Siletz and Yaquina River Subbasin (#17100204), Lincoln County, Oregon

Dear Mr. Speaks:

Enclosed is a conference opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of the proposed 2003-2010 Multi-Year Harvest Plan of the Confederated Tribes of the Siletz Indians in Lincoln County, Oregon. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of Oregon Coast coho salmon (*Oncorhynchus kisutch*), which are proposed for listing as *threatened* under the Endangered Species Act (ESA). As required by section 7 of the ESA, NOAA Fisheries included reasonable and prudent measures with nondiscretionary terms and conditions that are necessary to minimize the impact of incidental take associated with this action. However, the incidental take statement does not become effective until NOAA Fisheries adopts this Opinion as a biological opinion, after the listing is final. Until the time that the species is listed, the prohibitions of the ESA do not apply.

This document also serves as consultation on essential fish habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and implementing regulations (50 CFR Part 600). NOAA Fisheries concluded that the proposed action may adversely affect designated essential fish habitat (EFH) for coho and Chinook salmon species. As required by section 305(b)(4)(A) of the MSA, included are conservation recommendations that NOAA Fisheries believes will avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting from the proposed action. As described in the enclosed consultation, 305(b)(4)(B) of the MSA requires that a Federal action agency must provide a detailed response in writing within 30 days after receiving an EFH conservation recommendation.

Please direct any questions regarding this consultation to Rob Markle, fisheries biologist, of my staff in the Oregon Coast/Lower Columbia Habitat Branch of the Oregon State Habitat Office at 503.230.5419.

Sincerely,

for Michael R Crouse

D. Robert Lohn
Regional Administrator

cc: Michael Kennedy, Confederated Tribes of Siletz Indians
Bridgette Tuerler, FWS

Endangered Species Act - Section 7 Consultation Conference Opinion

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Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation

2003-2010 Multi-Year Harvest Plan of the Confederated Tribes of the Siletz Indians
Siletz and Yaquina River Subbasin (#17100204),
Lincoln County, Oregon

Agency:	Bureau of Indian Affairs
Consultation Conducted By:	NOAA's National Marine Fisheries Service, Northwest Region
Date Issued:	June 28, 2004
Issued by:	F/ Michael R Course _____ D. Robert Lohn Regional Administrator
Refer to:	**2003/01253**

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1. INTRODUCTION

The Endangered Species Act (ESA) of 1973 (16 USC 1531-1544), as amended, establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with U.S. Fish and Wildlife Service (FWS) and NOAA's National Marine Fisheries Service (NOAA Fisheries), as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitats. This conference opinion (Opinion) is the product of an interagency conference pursuant to section 7(a)(2) of the ESA and implementing regulations found at 50 CFR 402.

The analysis also fulfills the essential fish habitat (EFH) requirements under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (§305(b)(2)).

1.1 Background and Conference History

On September 29, 2003, NOAA Fisheries received a letter from the Bureau of Indian Affairs (BIA) requesting informal consultation pursuant to section 7(a)(2) of the ESA, and EFH consultation pursuant to section 305(b)(2) of the MSA for the Confederated Tribes of Siletz Indians' (CTSI) 2003-2010 Multi-Year Harvest Plan (Harvest Plan) in Lincoln County, Oregon. A biological assessment (BA) describing the potential effects of the proposed action on coho (*Oncorhynchus kisutch*) and Chinook (*O. tshawytscha*) salmon was submitted with the letter. The BA concluded that the proposed action was not likely to adversely affect ESA-listed (threatened) Oregon Coast (OC) coho salmon, and would not adversely affect MSA-designated EFH for coho and Chinook salmon.

On October 30, 2003, NOAA Fisheries requested that the CTSI provide additional information to clarify effects of the proposed action. NOAA Fisheries and CTSI worked to resolve the information needs and on December 22, 2003, NOAA Fisheries considered the information provided sufficient to complete consultation. On January 15, 2004, NOAA Fisheries received a letter from the BIA requesting the consultation be changed from informal to formal consultation. The subject Opinion was prepared in response.

NOAA Fisheries tracks the locations of consultations using the Regional Ecosystem Office (REO) subwatershed delineations as provided by the Bonneville Power Administration (BPA) at their website (http://nppc.bpa.gov). These delineations differ from those used by the CTSI in their BA and supplementary information. In its analysis, NOAA Fisheries' considered the CTSI information generally representative of either delineation, although absolute values likely differ.

NOAA Fisheries used the REO subwatersheds in the this analysis. Where CTSI attributed particular information (*e.g.*, road density, stand age class) to a subwatershed both the CTSI and REO subwatersheds are presented. This predominately occurs in the environmental baseline section of the Opinion.

1.2 Proposed Action

The BIA proposes to authorize the timber harvest of 10 units on CTSI lands in five 6th field watersheds (as delineated by REO) of the Siletz-Yaquina subbasin of the Northern Oregon Coastal Basin (Figure 1, Table 1). The purpose of the harvest is to manage CTSI timber resources in accordance with their 1999-2010 Forest Resource Management Plan (Forest Plan) and provide revenue to fund tribal government. The Forest Plan has not been the subject of an ESA consultation.

The subject consultation specifically does not address herbicide use[1] or pre-commercial and commercial thinning.

1.2.1 North Fork #2 Harvest Unit

CTSI proposes to clearcut 92 acres of forest via sale to an outside purchaser during the years of 2003 to 2005 (Tables 1 and 2). The proposed harvest unit contains "mature mixed conifer and hardwood," which are 130 years old, and "immature mixed conifer and hardwood," which are 80 years old (Table 1). Approximately 0.74 miles of new gravel road would be constructed between July 10 and October 31 (Table 3). In addition, 1.75 miles of road would be improved[2] during the dry season (June through October) by grading, brush clearing, and surfacing with crushed aggregate. Timber harvest (4,083 thousand board feet (MBF)) would occur between September and March using a cable logging system. Slopes within the harvest unit range from 5% to 80%. Twenty-one acres have a slope greater than 70%. There would be approximately 20 to 24 yarding corridors through stream buffers.[3]

[1] Letter from M. Kennedy, CTSI, to Rob Markle, NOAA Fisheries, in response to a request to request for additional information (December 22, 2003).

[2] The number of miles of new road construction and the number of miles of road betterment are shown here as modifications from original B.A. Letter from M. Kennedy, CTSI, to Rob Markle, NOAA Fisheries, in response to request for additional information (March 8, 2004).

[3] Letter from M. Kennedy, CTSI, to Rob Markle, NOAA Fisheries, in response to request for additional information (March 8, 2004).

Figure 1. CTSI Harvest Plan within the Siletz-Yaquina Subbasin

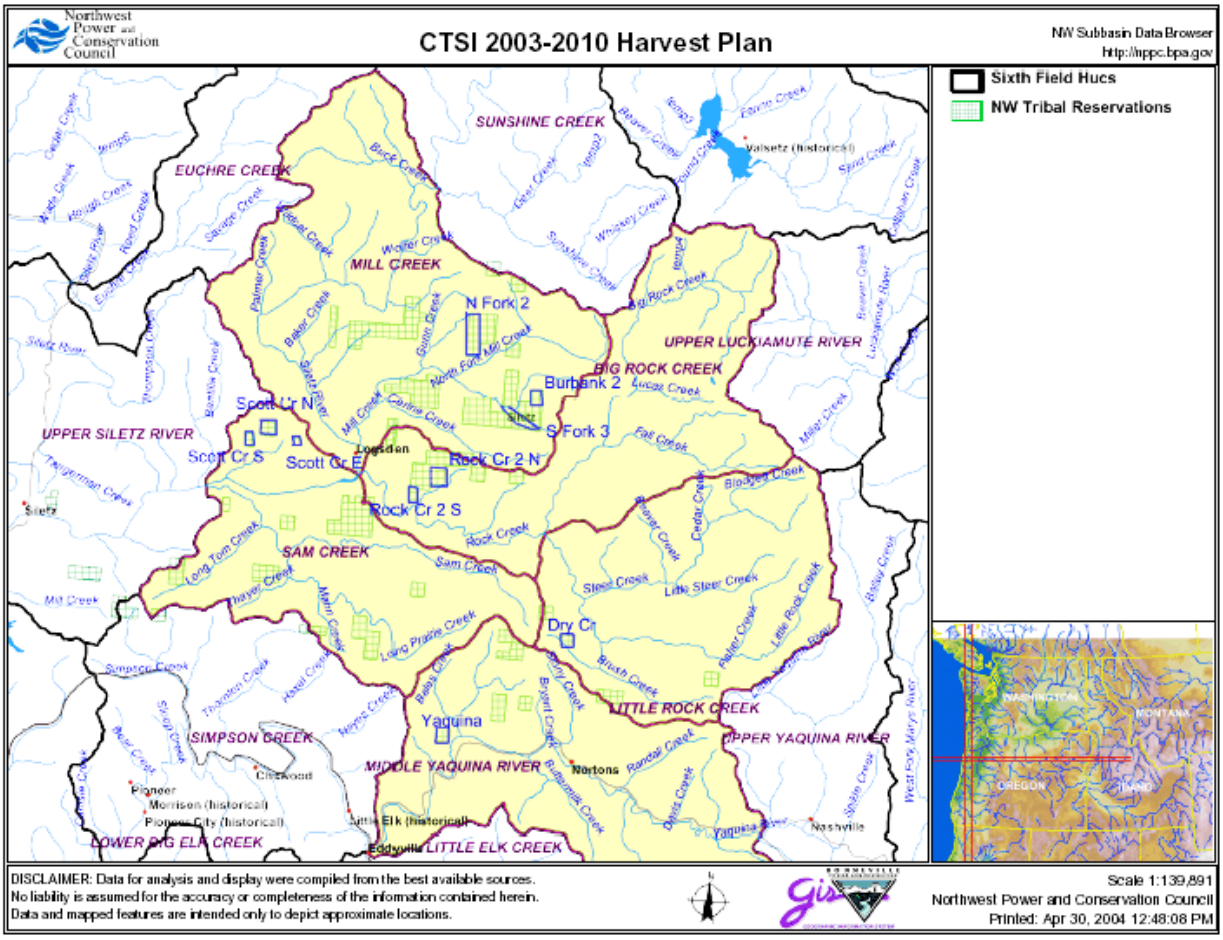

Table 1. Harvest Units Included in Harvest Plan

Subwatershed (REO 6th field)	Harvest Unit	Stand Age (yrs)	Harvest Area (acres)	Yarding System	Nearest Coho Habitat Stream	Downstream Distance to Coho Habitat (feet)
Mill Creek	North Fork #2	80-130	92	cable	N.F. Mill Cr	1,000
	Burbank #2	110	37	cable	S.F. Mill Cr	1,600-2,700
	South Fork #3	110-140	63	cable	S.F. Mill Cr	Adjacent
Sam Creek	Scott Cr East	120	7	cable	Scott Cr	1,300
	Scott Cr South	50-90	17	cable	Scott Cr	3,400
	Scott Cr North	50-120	33	cable	Scott Cr	2,000
Little Rock Creek	Dry Cr	90-170	36	cable	Brush Cr	3,840
Big Rock Creek	Rock Cr #2 North	50-140	76	cable	Trib to Rock Cr	1,300
	Rock Cr #2 South	100-110	13	cable	No streams within unit	
Middle Yaquina R	Yaquina	80	39	cable	Yaquina R. & Bales Cr	700 & 2,300 1,700
Total			413			

Table 2. Expected Operation Year(s) for Harvest Units by Watershed[4]

Watershed (5th field)	Subwatershed (REO 6th field)	Harvest Unit	Operation Year							
			2003	2004	2005	2006	2007	2008	2009	2010
Middle Siletz R (17100204-05)	Mill Creek (17100204-0502)	North Fork #2	■	■	■					
		Burbank #2						■	■	
		South Fork #3							■	■
Lower Siletz R (17100204-07)	Sam Creek (17100204-0701)	Scott Creek East				■				
		Scott Creek South				■	■			
		Scott Creek North				■	■			
Rock Creek (17100204-06)	Little Rock Creek (17100204-0601)	Dry Creek			■					
	Big Rock Creek (17100204-0602)	Rock Creek #2 North					■	■		
		Rock Creek #2 South					■	■		
Upper Yaquina (17100204-01)	Middle Yaquina R (17100204-0102)	Yaquina			■					

[4] NOAA Fisheries uses the hydrologic unit codes and names available at: http://nppc.bpa.gov/open_window.htm.

Table 3. Operation Seasons for Harvest Unit Activities

Subwatershed (REO 6th field)	Harvest Unit	Project Element	Calendar Year (month) J F M A M J J A S O N D	Operation Period
Mill Creek	North Fork #2	Road Betterment		Jun 1 - Oct 31
		Road Construction		Jul 10 - Oct 31
		Timber Felling		Sep 16 - Mar 31
		Timber Yarding		Sep 16 - Mar 31
		Timber Hauling		Sep 16 - Mar 31
	Burbank #2	Road Construction		Jul 10 - Oct 31
		Timber Felling		Sep 16 - Mar 31
		Timber Yarding		Sep 16 - Mar 31
		Timber Hauling		Sep 16 - Mar 31
	South Fork #3	Timber Felling		Sep 16 - Mar 31
		Timber Yarding		Sep 16 - Mar 31
		Timber Hauling		Sep 16 - Mar 31
Sam Creek	Scott Cr East	Road Construction		Jul 10 - Oct 31
		Timber Felling		Sep 16 - Mar 31
		Timber Yarding		Sep 16 - Mar 31
		Timber Hauling		Sep 16 - Mar 31
	Scott Cr South[5]	Road Construction		Jun 1 - Oct 31
		Timber Felling		Year Round
		Timber Yarding		Year Round
		Timber Hauling		Jun 1 - Oct 31
	Scott Cr North[6]	Road Construction		Jun 1 - Oct 31
		Timber Felling		Year Round
		Timber Yarding		Year Round
		Timber Hauling		Year Round
Little Rock Creek	Dry Cr[7]	Road Construction		Jun 1 - Oct 31
		Timber Felling		Year Round
		Timber Yarding		Year Round
		Timber Hauling		Jun 1 - Oct 31
Big Rock Creek	Rock Cr #2 North	Road Construction		Jul 10 - Oct 31
	Rock Cr #2 South	Timber Felling		Sep 16 - Mar 31
		Timber Yarding		Sep 16 - Mar 31
		Timber Hauling		Sep 16 - Mar 31
Middle Yaquina R	Yaquina[7]	Road Construction		Jun 1 - Oct 31
		Timber Felling		Year Round
		Timber Yarding		Year Round
		Timber Hauling		Jun 1 - Oct 31

[5] Road betterment and road construction activities would occur June 1 to October 31.

[6] The evaluation of effects for this consultation considers road construction activities to occur from June through October. Dependent upon results of marbled murrelet surveys in summer 2004, this road construction season may be shortened to July 10 through October 31.

One main unnamed tributary originates within the harvest unit and eventually flows into North Fork Mill Creek. The upper two-thirds of the unnamed tributary is not fish accessible due to a waterfall, thus this portion would have a 50-foot, no-harvest buffer on each side of the stream. The lower 1,250 feet would be protected by a no-harvest buffer that is a minimum of 100 feet wide on each side of the stream. The small, non-fish-bearing, intermittent tributaries to the mainstem (approximately 2,000 feet) have minimum no-harvest buffer widths of 50 feet on each bank of the streams. Coho salmon habitat (North Fork Mill Creek) is approximately 1,000 feet downstream of the harvest unit boundary. Aerial photographs from 2003 suggest riparian conditions along the 1,000-foot reach may be degraded.

The haul route from the harvest unit would require hauling on three separate roads that would cover approximately 6.8 miles of gravel road (Table 4). The reconstructed road on the eastern boundary of the harvest unit would require placement of a 36-inch culvert (stream #30), which is considered sufficient to handle a 500-year flood event. This culvert would be approximately 3,100 feet from the nearest coho-bearing stream, North Fork Mill Creek. The haul routes would cross a total of six streams by way of culverts ranging from 100 to 3,600 feet upstream of coho salmon, and one stream by way of a bridge at coho salmon habitat. Approximately 8 to 10 log trucks per day would use this road system for approximately 95 to 120 days. Hauling is proposed for September 16 to March 31 (Table 3).

1.2.2 Burbank #2 Harvest Unit

CTSI proposes to clearcut 37 acres of forest via sale to an outside purchaser during the years of 2008 to 2009. The proposed harvest unit contains "mature conifer" and "mature mixed conifer and hardwood," which are 110 years of age (Table 1). Approximately, 1.29 miles of new gravel road would be constructed between July 10 and October 31 (Table 3). Timber harvest (1,650 MBF) would occur from September through March using a cable logging system. Slopes within the harvest unit range from 5% to 80%. Four acres have a slope greater than 70%. There would be approximately one yarding corridor through a stream buffer.

There are portions of five headwater streams that originate within the boundaries of this harvest unit. Each stream would have a minimum 50-foot no-harvest buffer on each side. Coho salmon habitat (South Fork Mill Creek) is approximately 1,600 to 2,700 feet downstream of the harvest unit boundary depending on the stream.

The haul route from the harvest unit would require hauling over approximately 3.2 miles of gravel road (Table 4). The haul route crosses two streams by way of culverts on tributaries to Big Rock Creek. Each stream crossing is 1,500 feet from the nearest coho-inhabited stream. The road parallels Big Rock Creek (average distance of 700 to 800 feet from stream) from its junction with Logsden Road to approximately milepost 1.5. Approximately 8 to 10 log trucks per day would use this road system for approximately 38 to 48 days. Hauling is proposed for September 16 to March 31 (Table 3).

Table 4. Timber Hauling Under the Harvest Plan

Harvest Unit	Unpaved Haul (miles)	Stream Crossings (#)	Min. Distance to Coho (feet)	Haul Season	Haul Days (#)	Est. Total Trucks [(a)] (#)
N. Fork #2	6.8	7	crosses habitat	wet	95-120	968
Burbank #2	3.2	2	1,500	wet	28-48	378
S. Fork #3	4.8	6	crosses habitat	wet	69-86	698
Scott Cr E	4.9	2	crosses habitat	wet	7-9	72
Scott Cr S	4.2	1	200	dry	10-13	104
Scott Cr N	3.1	0	na	year round	28-35	284
Dry Cr	3.6	2	crosses habitat	dry	27-35	279
Rock Cr #2 N	3.1	2	crosses habitat	wet	70-87	707
Rock Cr #2 S	0.5	0	na	wet	17-20	167
Yaquina	4.4	1	crosses habitat	dry	19-25	198
Total	38.6	23				3,855

(a) Estimated total trucks based on median number of haul days times 9 trucks per day.

1.2.3 South Fork #3 Harvest Unit

CTSI proposes to clearcut 63 acres of forest via sale to an outside purchaser during the years of 2009 to 2010. The proposed harvest unit contains "mature conifer" and "mature mixed conifer and hardwood" that are approximately 110 to 140 years of age (Table 1). No road construction would occur. Timber harvest (2,581 MBF) would occur from September through March using a cable logging system (Table 3). Slopes within the harvest unit range from 5% to 80%. Eighteen acres have a slope greater than 70%. These steep slopes are beside South Fork Mill Creek (coho habitat) and three of its tributaries. All streams have a no-harvest buffer. There would be approximately 2 to 5 yarding corridors through stream buffers. No yarding corridors would cross South Fork Mill Creek.

There are three small headwater tributaries that originate within the harvest unit and drain directly to South Fork Mill Creek (coho salmon habitat). All of these streams would have a minimum 50-foot no-harvest buffer on each side. South Fork Mill Creek runs along the northern boundary of the harvest unit. It would have a minimum 150-foot no-harvest buffer from the west boundary of

the unit to the upstream extent of coho salmon habitat at river fork and a minimum 100-foot no-harvest boundary upstream of that point to the eastern boundary of the unit.[7]

The haul route from the harvest unit would require hauling over approximately 4.8 miles of gravel road (Table 4). The haul route crosses Cerine Creek twice by way of bridges at coho salmon habitat, crosses three tributaries of Cerine Creek by way of culverts that range from 100 to 200 feet upstream from coho salmon habitat, and crosses Mill Creek by way of a bridge at coho salmon habitat. Cerine Creek Road parallels Cerine Creek (average distance from stream 200 to 300 feet) from Mill Creek to South Fork #3 turnoff at approximately milepost 2.9. Approximately eight to 10 log trucks per day would use this road system for approximately 69 to 86 days. Hauling is proposed for September 16 to March 31 (Table 3).

1.2.4 Scott Creek East Harvest Unit

CTSI proposes to clearcut 7 acres of forest via sale to an outside purchaser in the year of 2006.[8] The proposed harvest unit contains a stand of "mature conifer" that are 120 years of age (Table 1). Approximately, 0.35 miles of new gravel road would be constructed from July 10 through October (Table 3). Timber harvest (307 MBF) would occur from September through March using a cable logging system. Slopes within the harvest unit range from 5% to 40%. There would be approximately one to two yarding corridors through stream buffers.

There are two seasonal headwater streams in the harvest unit. The northern branch would have a minimum 50-foot no-harvest buffer on each bank of the stream. The southern ephemeral branch would not be buffered. Coho salmon habitat (Scott Creek) is approximately 1,300 feet downstream of the harvest unit boundary.

The haul route from the harvest unit would require hauling over approximately 4.9 miles of gravel road (Table 4). The haul route crosses a tributary of Scott Creek (200 feet from nearest coho-inhabited stream) by way of a culvert and Scott Creek (coho-inhabited stream) by way of a bridge. Approximately 8 to 10 log trucks per day would use this road system for approximately 7 to 9 days. Hauling is proposed for September 16 to March 31 (Table 3).

1.2.5 Scott Creek South Harvest Unit

CTSI proposes to clearcut 17 acres of forest via sale to an outside purchaser during the years of 2006 to 2007.[6] The proposed harvest unit contains "mature conifer" stands, which are 90 years old, and "mature hardwood" stands, which are 50 years old (Table 1). Approximately, 0.07 miles of new gravel road would be constructed during July through October (Table 3). Timber felling

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[7] Letter from M. Kennedy, CTSI, to Rob Markle, NOAA Fisheries, in response to a request to increase certain stream buffer widths (December 23, 2003).

[8] Letter from M. Kennedy, CTSI, to Bridgette Tuerler, USFWS, in response to questions asked at November 12, 2003 meeting of CTSI, USFWS, NOAA Fisheries (December 12, 2003).

and yarding (406 MBF) would occur year round using a cable logging system. Hauling would occur from June through October. Slopes within the harvest unit range from 5% to 60%. There would be approximately one to two yarding corridors through stream buffers.

One unnamed tributary originates outside the harvest unit but flows through the northeast corner of the unit. The tributary is classified as a small fish-bearing stream, thus, it would have a minimum 100-foot no-harvest buffer on each bank of the stream. Coho salmon habitat (Scott Creek) is approximately 3,400 feet downstream of the harvest unit boundary.

The haul route from the harvest unit would require hauling over approximately 4.2 miles of gravel road (Table 4). The haul route crosses a tributary of Scott Creek (200 feet from nearest coho-inhabited stream) by way of a culvert. Approximately 8 to 10 log trucks per day would use this road system for approximately 10 to 13 days. Hauling is proposed for June 1 to October 31 (Table 3).

1.2.6 Scott Creek North Harvest Unit

CTSI proposes to clearcut 33 acres of forest via sale to an outside purchaser in 2006 to 2007.[6] The proposed harvest unit contains "mature conifer" stands, which are 120 years of age, and "mature hardwood" stands, which are 50 years old (Table 1). Approximately, 0.84 miles of new gravel road would be constructed during July through October (Table 3). Timber harvest (1,170 MBF) would occur year round using a cable logging system. Slopes within the harvest unit range from 5% to 60%. There would be approximately 3 to 5 yarding corridors through stream buffers.

Three unnamed headwater tributaries that originate outside the action area flow through the harvest unit. All three tributaries are classified as small fish-bearing streams and would be protected with a minimum 100-foot no-harvest buffer. Coho salmon habitat (Scott Creek) is approximately 2,000 feet downstream of the harvest unit boundary.

The haul route from the harvest unit would require hauling over approximately 3.1 miles of gravel road (Table 4). The haul route does not cross any streams. Approximately eight to 10 log trucks per day would use this road system for approximately 28 to 35 days. Hauling is proposed to occur year round (Table 3).

1.2.7 Dry Creek Harvest Unit

CTSI proposes to clearcut 36 acres of forest via sale to an outside purchaser in 2005. The proposed harvest unit contains "mature conifer," "mature mixed conifer and hardwood," and "mature hardwood." The conifers are 140 to 170 years of age and the hardwoods are 90 years of age (Table 1). Approximately, 0.38 miles of new gravel road would be constructed during June through October (Table 3). In addition, 0.57 miles of road would be improved during the dry season (June through October) by grading, brush clearing, and surfacing with crushed aggregate. Timber felling and yarding (1,145 MBF) would occur year-round using a cable logging system.

Slopes within the harvest unit range from 5% to 70%. There would be approximately two to three yarding corridors through stream buffers.

Approximately 1,022 feet (21.2%) of Dry Creek, a small fish-bearing stream, is within the harvest unit. Dry Creek is protected by a no-harvest buffer that is, at minimum, 100 feet in width for each bank of the stream. Coho salmon habitat (Brush Creek) is approximately 3,840 feet downstream of the unit boundary.

The haul route from the harvest unit would require hauling over approximately 3.6 miles of gravel road (Table 4). It would cross two streams, Stoney Creek (coho-inhabited stream) and a tributary of Stoney Creek (1,000 feet from nearest coho-inhabited stream), by way of culverts. Approximately 8 to 10 log trucks per day would use this road system for approximately 27 to 35 days. Hauling is proposed for June 1 to October 31 (Table 3).

1.2.8 Rock Creek #2 North Harvest Unit

CTSI proposes to clearcut 76 acres of forest via sale to an outside purchaser during the years of 2007-2008.[1] The proposed harvest unit contains "mature mixed conifer and hardwood," "mature hardwood," and "immature mixed conifer and hardwood." The mature stands are approximately 110 to 140 years of age and the immature stands are 50 years of age (Table 1). Approximately, 0.23 miles of new gravel road would be constructed between July 10 and October 31 (Table 3). Timber harvest (2,489 MBF) would occur from September to March using a cable logging system. Slopes within the harvest unit range from 5% to 80%. Six acres have a slope greater than 70%. There would be no yarding corridors through stream buffers.

Three streams originate within the harvest unit. There is one small fish-bearing tributary of Rock Creek, which runs along the west border of the harvest unit. The west side of this stream was logged in 1990. The east bank of the stream would have a minimum 100-foot no-harvest buffer. The northern intermittent tributary would not be buffered. The southern intermittent tributary would have a 50-foot minimum no-harvest buffer on each bank of the stream. Coho salmon habitat is approximately 1,300 feet downstream of the property boundary.

The haul route from the harvest unit would require hauling over approximately 3.1 miles of gravel road (Table 4). Both stream crossings are by way of bridges over Mill Creek and Cerine Creek (both creeks are inhabited by coho salmon). Approximately 8 to 10 log trucks per day would use this road system for approximately 70 to 87 days. Hauling is proposed for September 16 to March 31 (Table 3).

1.2.9 Rock Creek #2 South Harvest Unit

CTSI proposes to clearcut all 13 acres of forest via sale to an outside purchaser during the years of 2007 to 2008.[1] The proposed harvest unit contains "mature mixed conifer and hardwood," which are 100 to 110 years old (Table 1). Approximately, 0.36 miles of new gravel road would be constructed between July 10 and October 31 (Table 3). Timber harvest (589 MBF) would

occur from September through March using a cable logging system. Slopes within the harvest unit range from 5% to 60%. There would be no yarding corridors through stream buffers.

No streams are within the boundaries of this harvest unit.

The haul route from the harvest unit would require hauling over approximately 0.5 miles of gravel road and would not cross any streams (Table 4). Approximately 8 to 10 log trucks per day would use this road system for approximately 17 to 20 days. Hauling is proposed for September 16 to March 31 (Table 3).

1.2.10 Yaquina Harvest Unit

CTSI proposes to clearcut 39 acres of forest via sale to an outside purchaser in 2005. The proposed harvest unit is occupied by a stand of "mature hardwood" that is 80 years of age (Table 1). Approximately 1.0 mile of new dirt road would be constructed during June through October (Table 3). Timber felling and yarding (777 MBF) would occur year-round using a cable logging system. Hauling would occur from June through October. Slopes within the harvest unit range from 5% to 80%. Six acres have a slope greater than 70%. There would be no yarding corridors through stream buffers.

Three small, intermittent headwater, non-fish-bearing streams are in the harvest unit. Two of the three streams are ephemeral and would not be protected by a riparian buffer. These two streams are in the southern portion of the harvest unit and eventually flow into the Yaquina River (approximately 700 feet to the southeast and approximately 2,300 feet to the south). The third stream in the northwest corner of the harvest unit would be protected by a 50-foot no-harvest buffer on either side. This northwest tributary flows approximately 1,700 feet to Bales Creek, coho salmon habitat.

The haul route from the harvest unit would require hauling over approximately 1.0 mile of natural surface road and an additional 3.4 miles of gravel road (Table 4). The haul route crosses Hayes Creek (inhabited by coho salmon) by use of a bridge that is 0.4 miles from the junction of Hayes Creek Road and Highway 20. Approximately 8 to 10 log trucks per day would use this road system for approximately 19 to 25 days. Hauling is proposed for June 1 to October 31 (Table 3).

1.2.11 Common to All Units

Slopes identified by CTSI as unstable would not be harvested.[9] Those headwall areas within the no-harvest buffer distance of a stream would not be harvested. Unless indicated specifically in the harvest unit description above or the area is determined to be unstable, headwall areas in the unit that are outside the no-harvest buffer would be harvested (*e.g.*, headwall above the origin

[9] E-mail from M. Kennedy, CTSI, to Rob Markle, NOAA Fisheries, in response to request for comments on draft project description (February 27, 2004).

point an un-buffered intermittent channel). That said, CTSI reviewed and extended no-harvest buffers along intermittent and ephemeral channels that the Tribe identified as having the potential to deliver debris torrents downstream to coho salmon habitat.

All stream buffer widths are minimum distances and are measured as horizontal distance from the edge of the ordinary high water elevation. Stream buffer trees that need to be felled for yarding corridors may be removed from the harvest unit.[10] Any yarding corridors needed through stream buffers would be on streams that are not coho habitat.[11]

CTSI would retain the authority to delay or suspend operations should severe weather conditions warrant. Severe weather may include excessive rainfall (>2 inches in one day), snow, freeze/thaw cycles after prolonged freeze, high winds, or other combinations of events that are judged by CTSI to be detrimental to the road or harvest unit soils.

The harvest unit would be prepared for planting the following spring or fall after harvest is complete. Site preparation may include the use of prescribed burning. No burning would occur within the protected stream buffer area.[12] Burning activities would take place under conditions that create low intensity fires when soils or duff are moist. All pump intakes associated with water withdrawals for controlling burns would be screened to prevent fish entrainment.[13] No mechanical raking or scarification would occur as part of this action.[14]

No herbicides would be used in conjunction with the proposed action. During consultation, CTSI withdrew the proposal to use herbicides for site preparation.[1]

The winter after burning is completed, the harvest unit would be planted with Douglas-fir (436 seedlings/acre), western red cedar (25 seedlings/acre), and western hemlock (25 seedlings/acre). Laminated rot root pockets observed within the harvest units would be planted with western red cedar (75%) and red alder (25%). In addition, stream buffer areas would be inter-planted with western red cedar where site conditions are suitable to provide reasonable assurance of planting success.

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[10] Letter from M. Kennedy, CTSI, to Rob Markle, NOAA Fisheries, in response to a request to increase the width of certain stream buffers (December 23, 2003).

[11] Letter from M. Kennedy, CTSI, to Rob Markle, NOAA Fisheries, in response to request for additional information (December 22, 2003).

[12] E-mail from M. Kennedy, CTSI, to Rob Markle, NOAA Fisheries, in response to request for comments on draft project description (February 27, 2004).

[13] E-mail from M. Kennedy, CTSI, to Rob Markle, NOAA Fisheries, in response to request for comments on draft project description (February 27, 2004).

[14] E-mail from M. Kennedy, CTSI, to Rob Markle, NOAA Fisheries, in response to request for comments on draft project description (February 27, 2004).

A total of 4.51 miles of new road are proposed (Table 5). All roads on CTSI lands, including new roads constructed under this proposed action, would remain and be maintained after the harvest is complete. The purchaser would have responsibility to maintain all roads, including non-CTSI roads, during the timber sale contract period.

CTSI proposes to complete pre-commercial thinning in the harvest units 10 to 15 years after planting and a commercial thin at age 40. Harvest rotation length would be 80 years. The necessary details to allow an evaluation of effects for these future actions are not available at this time, and therefore are not a subject of this consultation.

Table 5. New Road Construction under the Harvest Plan

Subwatershed (REO 6th field)	Harvest Unit	Miles of new road construction on tribal land	Total miles of new road construction
Mill Creek	North Fork #2	0.22	0.74
	Burbank #2	0.46	1.29
	South Fork #3	0	0
Sam Creek	Scott Cr East	0.09	0.35
	Scott Cr South	0.07	0.07
	Scott Cr North	0.33	0.84
Little Rock Creek	Dry Cr	0.23	0.38
Big Rock Creek	Rock Cr #2 North	0.23	0.23
	Rock Cr #2 South	0	0.36
Middle Yaquina R	Yaquina	0.17	0.25
Total		1.8	4.51

CTSI would implement the following best management practices (BMPs) to minimize the adverse effects of the proposed action on fish and their habitat.

Timber Harvest - Planning and Design

a. Use Natural Resource Conservation Service soil classifications to identify areas not suitable for timber production.
b. Use field investigation, through reconnaissance using topographic maps, aerial photos, ground profile surveys, and walking the ground, to identify unsuitable areas.
c. Design the proposed harvest units to avoid, mitigate, and minimize potential adverse impacts to soil and water.
d. Include stream channels on field maps for transfer to timber sale contract maps.

e. Design the proposed harvest units to avoid, mitigate, and/or minimize potential adverse impacts to fish.

Stream Buffers

In addition to buffer widths, additional measures are taken and practices followed to prevent damage to riparian/wetland ecosystems and disturbance to streambanks, protect natural flow of streams, and preserve nutrient cycling from woody debris.

a. Directional felling of trees away from stream buffers.
b. Retain snags within stream buffers, the only exception would be for safety or fire hazard reasons.
c. Logs in the stream buffer that were down before a planned management activity would be retained in their natural state.
d. Log landings are not to be within 50 feet of stream buffers.
e. Provide no-harvest protection to headwalls within stream-side buffers and those outside buffers when area is determined to be unstable.
f. When yarding through stream buffers is absolutely necessary, corridors would be restricted to the minimum number feasible, and would not exceed 30 feet in width or reduce crown cover on a project stream segment to less than 80% of pre-disturbance conditions, and would require logs to be fully suspended over water and adjacent banks. Yarding corridors through stream buffers would be spaced at least 100 feet apart.

Leave Tree/Log Retention

a. A minimum of two green trees and/or hard snags (minimum 11 inches diameter breast height and 30 feet tall, minimum 75% conifer) per harvest acre would be left within the unit.
b. Two down logs (minimum 16 feet long and 12 inches diameter on large end, minimum 50% conifer) per acre would be retained.

Felling

a. Trees shall be felled quarter to the slope to minimize breakage and ground disturbance.
b. Use high stumps and/or temporary leave trees to keep logs on the slope to minimize ground disturbance and/or prevent logs from rolling downhill into stream buffers.
c. Use directional felling, jacking, sniping or beveling of stumps and, if needed, line pulling of trees to avoid drainages and reserve trees and/or to minimize breakage and ground disturbance.
d. Stream buffer trees that may be felled for yarding corridors may be removed from the harvest unit.

Yarding Methods

a. Suspend the front end of logs above ground during yarding.

b. Fully suspend logs above the ground during yarding when crossing riparian vegetation and fragile soils.
c. When yarding through stream buffers, the carriage shall have lateral yarding capabilities and shall be able to maintain a fixed position on the skyline during lateral yarding.
d. Use motorized carriages and/or slackpulling carriages to reduce the number of corridors through stream buffers.
e. Hand waterbar cable yarding corridors immediately after use on sensitive soils where gouging occurs.
f. Respool and re-rig yarding cables, where necessary, to prevent disturbance and/or damage to the soil and to protect stream buffers or other sensitive areas.

Roads

a. The planning, design, construction, betterment, and maintenance of the road systems in all ten harvest units would follow the BMPs in the 1999-2010 Forest Resource Management Plan (Appendix B, pages B-6 to B-14).
b. The whole focus of the Tribe's road management is to have road systems that meet resource management objectives while minimizing resource damage.
c. Protect stream crossings with sediment traps.[15]

2. ENDANGERED SPECIES ACT

2.1 Conference Opinion

NOAA Fisheries listed OC coho salmon as threatened under the ESA on August 10, 1998 (63 FR 42587), and issued protective regulations under section 4(d) of the ESA on July 10, 2000 (65 FR 42422). Critical habitat is not designated or proposed for this species.

In September 2001, in the case *Alsea Valley Alliance v. Evans*, U.S. District Court Judge Michael Hogan struck down the 1998 ESA listing of OC coho salmon and remanded the listing decision to NOAA Fisheries for further consideration. In November 2001, the Oregon Natural Resources Council appealed the District Court's ruling. Pending resolution of the appeal, in December 2001, the Ninth Circuit Court of Appeals stayed the District Court's order that voided the OC coho listing. While the stay was in place, the OC coho Evolutionarily Significant Unit (ESU) was again afforded the protections of the ESA.

On February 24, 2004, the Ninth Circuit dismissed the appeal in *Alsea*. On June 15, 2004, the Ninth Circuit returned the case to Judge Hogan and ended its stay. Judge Hogan's order invalidating the OC coho listing is back in force. Accordingly, OC coho are now not listed, and

[15] Letter from M. Kennedy, CTSI, to Rob Markle, NOAA Fisheries, in response to a request to request for additional information (December 22, 2003).

ESA provisions for listed species, such as the consultation requirement and take prohibitions, do not apply to OC coho.

In response to the *Alsea* ruling, NOAA Fisheries released its revised policy for considering hatchery stocks when making listing decisions on June 3, 2004 (69 FR 31354). NOAA Fisheries completed a new review of the biological status of OC coho salmon, and applying the new hatchery listing policy, proposed to list OC coho salmon as a threatened species on June 14, 2004 (69 FR 33102). NOAA Fisheries must make a final decision on the proposed OC coho salmon listing by June 14, 2005.

The objective of this Opinion is to determine whether the Harvest Plan of the CTSI, to be authorized by the BIA, is likely to jeopardize the continued existence of OC coho salmon.

2.1.1 Biological Information

The biological information of coho salmon from Washington, Oregon, and California was reviewed by Weitkamp *et al*. 1995 and updated by NOAA Fisheries (2003). This information is summarized below, and information sources cited in those documents are included here by reference. Other sources are cited as relevant.

2.1.1.1 Coho Salmon

In contrast to the life history patterns of other Pacific salmonids, coho salmon generally exhibit a relatively simple three-year life cycle. Most coho salmon enter rivers between September and February. Coho salmon river entry timing is influenced by many factors, one of which appears to be river flow. In addition, some coastal stream systems may remain blocked by sandbars for most of the year except winter. In these systems, coho salmon are unable to enter the rivers until sufficiently strong freshets open passages through the bars. Coho salmon spawn from November to January, and occasionally into February and March. Spawning may be delayed particularly under winter drought conditions (Sandercock 1998).

Although each native stock appears to have a unique time and temperature for spawning that theoretically maximizes offspring survival, coho salmon generally spawn at water temperatures within the range of 50 to 55°F (10 to 12.8°C). Spawning occurs in a few third-order streams, but most spawning activity was found in fourth- and fifth-order streams. However, in the upper Toutle and Green Rivers of Washington, coho salmon were found to selectively prefer small streams with flows ranging from 2.9 to 4.0 cubic feet per second (Sandercock 1998). Spawning occurs in tributary streams with a gradient of 3% or less in clean gravel ranging in size from that of a pea to that of an orange. Spawning is concentrated in riffles or in gravel deposits at the downstream end of pools featuring suitable water depth (4 to 8 inches) and velocity (1.0 to 1.8 feet per second) (Sandercock 1998).

The favorable range for coho salmon egg incubation is 50 to 55°F (10 to 12.8°C). Egg incubation is variable depending on environmental conditions (*e.g.*, water temperature). Eggs incubate for

approximately 35 to 50 days, and start emerging from the gravel two to three weeks after hatching. Gravel sizes greater than 0.13 inch (3.35 mm) and smaller than 1.06 inches (26.9 mm) correlate well with survival to emergence (Sandercock 1998). Where gravels have a high concentration of fine sediment and sands (up to 50%), survival to emergence is lower. Following emergence, fry move into shallow areas near the streambanks. As fry grow, they disperse upstream and downstream to establish and defend territories.

Juvenile rearing usually occurs in tributary streams with a gradient of 3% or less, although they may move up to streams of 4% or 5% gradient. Juveniles have been found in streams as small as 3 to 6 feet (1 to 2 meters) wide. At a length of 1.5 to 1.8 inches (38 to 45 millimeters), the fry may migrate upstream a considerable distance to reach lakes or other rearing areas. Rearing requires temperatures of 68°F (20°C) or less, preferably 53 to 58°F (11.7 to 14.4°C). Coho salmon fry are most abundant in backwater pools during spring. During the summer, fry prefer pools featuring adequate cover such as large woody debris, undercut banks, and overhanging vegetation. Juvenile coho salmon prefer to over-winter in large mainstem pools, backwater areas and secondary pools with large woody debris, and undercut bank areas. Coho salmon rear in fresh water for up to 15 months, then typically migrate to the sea as smolts between March and June.

The ideal channel for maximum coho smolt production would have shallow depth (2.8 to 23.6 inches), fairly swift mid-stream flows (2 feet per second), numerous marginal back-eddies, narrow width (1.2 to 2.4 feet), copious overhanging mixed vegetation (to lower water temperatures, provide leaf-fall, and contribute terrestrial insects), and banks permitting hiding places. The early diets of emerging fry include chironomid larvae and pupae. Juvenile coho salmon are carnivorous opportunists that primarily eat aquatic and terrestrial insects. They do not appear to pick stationary items off the substratum.

Estuary residency may vary from less than one month to more than 3.5 months, dependent on fish age and/or size (Miller and Sadro 2000). In Oregon, estuary rearing and outmigration has been observed during non-conventional periods such as fall and winter. Juvenile coho salmon growth in estuaries may be nearly twice that found in freshwater (Miller and Sadro 2000). While living in the ocean, coho salmon remain closer to their river of origin than do Chinook salmon. Nevertheless, coho salmon have been captured several hundred to several thousand miles away from their natal stream (Hassler 1987). After about 12 months at sea, coho salmon gradually migrate south and along the coast, but some appear to follow a counter-clockwise circuit in the Gulf of Alaska (Sandercock 1998). Coho salmon typically spend two growing seasons in the ocean before returning to their natal streams to spawn as three year-olds. Some precocious males, called "jacks," return to spawn after only six months at sea.

2.1.1.2 Oregon Coast Coho Salmon ESU

The OC coho salmon evolutionarily significant unit (ESU) includes all naturally-spawned populations of coho salmon in Oregon coastal streams south of the Columbia River and north of Cape Blanco (63 FR 42587; August 10, 1998). Five artificial propagation programs are

considered part of the ESU: The North Umpqua River (ODFW stock # 18), Cow Creek (ODFW stock # 37), Coos Basin (ODFW stock #37), Coquille River (ODFW stock # 44), and North Fork Nehalem River (ODFW stock # 32) coho hatchery programs. NOAA Fisheries determined that these artificially propagated stocks are genetically no more than moderately divergent from the natural populations (NOAA Fisheries 2003).

The OC coho salmon ESU has been assessed previously. These reviews concluded the ESU was likely to become endangered in the foreseeable future (Weitkamp *et al.* 1995, Schiewe 1996, Schiewe 1997). The conclusion was based on several risk considerations. Natural production was less than 10% of historic levels and long-term trends were downward. Recruits per spawner showed a continuous decline. Hatchery influences, including out-of-basin transfers, were present in many populations. Recent droughts and changes in ocean production may have reduced run sizes. The primary habitat concern included the significant decrease in habitat capacity from historical levels due to widespread habitat degradation. During poor ocean conditions, only high quality habitat is capable of sustaining the species, and subpopulations dependent on medium and low quality habitats could become extinct.

In 2003, NOAA Fisheries reviewed the status of the OC coho salmon ESU (NOAA Fisheries 2003). Findings indicate that recent increases in spawner escapement levels are likely due to good ocean productivity and the elimination of direct harvest while freshwater productivity continues to decline. Continued degradation of freshwater habitat that results in decreased productivity may lead to localized extinction during the next low ocean productivity cycle. Approximately 30% of the ESU has suffered habitat fragmentation by culverts and thermal barriers, generating concerns about ESU spatial structure. Additionally, the lack of response to favorable ocean conditions for some populations in smaller streams, and the distinct patterns between north and south coast populations may indicate compromised connectivity among populations. The degradation of many lake habitats, and the resultant impacts on several lake populations in the OC coho salmon ESU, also poses risks to ESU diversity. Some reviewers felt recent increases in escapement so closely following years of recruitment failure demonstrated population resilience; however, the majority of reviewers felt high escapements should be maintained for a number of years and the freshwater habitat should demonstrate the capability to support high juvenile production from years of high spawner abundance.

Hatchery closures, reductions in the number of hatchery smolt releases, and improved marking rates of hatchery fish have reduced risks to diversity associated with artificial propagation. The reviewers found high risk in the viable salmonid population (VSP) productivity category, and comparatively lower risk for the other VSP categories. The five hatchery programs included in the ESU are operated by the State of Oregon to provide harvest opportunities. These programs are not managed to contribute to ESU abundance, productivity, spatial structure, or diversity. Two out-of-ESU hatchery programs (the Salmon River [ODFW stock # 33] and Trask River [ODFW stock #34] hatchery programs), however, do not incorporate natural fish into the broodstock and remain a threat to ESU diversity. Collectively, artificial propagation programs in the ESU provide a slight beneficial effect to ESU abundance, but have neutral or uncertain effects on ESU productivity, spatial structure, and diversity. NOAA Fisheries' assessment of the effects

of artificial propagation programs on the viability of the ESU concluded that the OC coho ESU in-total is "likely to become endangered in the foreseeable future." On June 14, 2004, NOAA Fisheries proposed the continued listing of OC coho salmon ESU as threatened under the ESA.

2.1.1.3 Siletz-Yaquina River Basin

A recent estimate of average annual abundance of wild coho salmon spawners in watersheds included in the project is 6,141 fish (1990 to 2003) with a range of 720 spawners (1997) to 27,415 spawners (2002) (ODFW 2004) (Table 6). Though final estimates of 2003 returns are not available, preliminary information indicate continued increases in coho salmon spawners (ODFW 2004). Recent increases have been attributed to conservation efforts (*e.g*., habitat restoration and harvest restrictions) and favorable ocean conditions, which are known to be cyclic.

Timing of adult coho salmon river entry is largely influenced by river flow. In the Siletz-Yaquina subbasin, adults typically enter rivers between September and mid-January, with peak migration occurring in October (Weitkamp *et al*. 1995) (Table 7). Spawning occurs from October to February, with peak spawning occurring in late-November (Weitkamp *et al*. 1995). The *Upper Siletz Watershed Analysis* (BLM 1996) indicates Siletz River run timing can be delineated into two distinct periods, one dominated by hatchery origin stock and the other by a wild stock. Fish of hatchery origin typically migrate upstream from October to late November in the Siletz River, while wild coho salmon migrate upstream from early December to early February (BLM 1996). Intragravel residency (egg to fry) varies greatly between river basins and reaches, and is largely dependent on substrate composition and water temperature (Sandercock 1998). No specific information is available on intragravel residence timing in project area watersheds. However, a study done in Oregon coastal streams found an average incubation period of 110 days, with emergence typically occurring 2 to 3 weeks following hatch (Sandercock 1998). This suggests a 4 to 5 month intragravel residency period. Seaward migration of juveniles occurs during the spring. Juvenile outmigration occurs from February through June, with peak migrations occurring from March through May (Weitkamp *et al*. 1995).

Table 6. Naturally-Produced Coho Salmon Spawning Populations in the Project Area (source: ODFW 2004)

	Estimated Wild Coho Population		
	Select Project Area Basins[(a)]		OC ESU
Year	Number of fish	Est. % of ESU	Number of fish
1990	822	5	16,510
1991	1,364	5	29,078
1992	3,080	8	38,604
1993	949	2	44,266
1994	3,648	10	37,477
1995	6,275	15	41,303
1996	5,890	10	59,453
1997	720	5	14,068
1998	759	4	19,816
1999	3,294	10	34,646
2000	4,200	8	54,085
2001	4,476	3	147,981
2002	27,415	12	231,411
2003[b]	23,084	11	212,894
Average	6,141	8	70,113

(a) Data for Siletz River and Yaquina River.
(b) 2003 Estimates are preliminary

Table 7. Life History Timing for OC Coho Salmon in the Siletz-Yaquina River Subbasin (HUC 17100204) (Weitkamp *et al*. 1995, Sandercock 1998). Dark shading indicates peak occurrence of life history event. Medium shading indicates increasing or declining occurrence of life history period or the herbicide application period, as appropriate. Light shading indicates onset or conclusion of life history period. Exceptions may exist that would allow individual fish to fall outside of the indicated periods.

Period of Proposed Action or Life History Event	Calendar Year (month)											
	J	F	M	A	M	J	J	A	S	O	N	D
Proposed Timber Harvest												
River Entry												
Spawning												
Intragravel Development[(1)]												
Juvenile Rearing												
Juvenile Out-migration												

(1) Based on spawning period (Weitkamp *et al*. 1995) and a 4-5 week intergravel development period (Sandercock 1998).

2.1.2 Evaluating Proposed Actions

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA. NOAA Fisheries must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the initial steps of: (1) Defining the biological requirements of the listed species; and (2) evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action; (2) the environmental baseline; and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed species' life stages that occur beyond the action area. If NOAA Fisheries finds that the action is likely to jeopardize the listed species, it must identify reasonable and prudent alternatives for the action.

For the proposed action, NOAA Fisheries' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. Because critical habitat is not designated for OC coho salmon, NOAA Fisheries did not include a critical habitat analysis.

2.1.3 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA section 7(a)(2) to listed salmon is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species, taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list the species for ESA protection and also considers new data available that is relevant to the determination.

The relevant biological requirements are those necessary for the listed species to survive and recover to naturally-reproducing population levels, at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful adult and juvenile migration, adult holding, spawning, egg incubation, and rearing. While conditions have generally improved since listing, the status of OC coho salmon remains in need of protection under the ESA. This elevated risk to the species survival and recovery is largely reflective of the cyclic nature of oceanic conditions, freshwater habitat conditions that are degraded and not properly functioning, and hatchery practices that threaten the species' ability to survive the natural range of habitat variability.

2.1.4 Environmental Baseline

In step 2 of NOAA Fisheries' analysis, we evaluate the relevance of the environmental baseline in the action area to the species' current status. The environmental baseline is an analysis of the effects of past and ongoing human-caused and natural factors leading to the current status of the species or its habitat and ecosystem within the action area. The action area is defined by NOAA Fisheries regulations (50 CFR 402) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action."

For the purposes of this consultation, the action area includes all subwatersheds in which the ten proposed harvest units and unpaved haul routes occur (Table 8).

The Siletz-Yaquina subbasin encompasses approximately 610 square miles, 360 square miles in the Siletz River and 250 square miles in the Yaquina River. The CTSI reservation lands represents 0.09% of the subbasin. The majority of both river basins are zoned for forestry, Siletz 95.26% and Yaquina 88.57%. The subject harvest units are in the mountainous uplands of the Oregon Coast Range and predominantly contain Douglas-fir.

Table 8. Action Area for CTSI Harvest Plan.

Subwatershed			Associated Watershed
(CTSI 6th field)	(REO 6th field)	(REO HUC#)	(5th field)
Cerine Creek	Mill Creek	17100204-0502	Middle Siletz River
Scott Creek	Sam Creek	17100204-0701	Lower Siletz River
Little Rock Creek	Little Rock Creek	17100204-0601	Rock Creek
Rock Creek	Big Rock Creek	17100204-0602	Rock Creek
Yaquina-Trout Creek	Middle Yaquina River	17100204-0102	Upper Yaquina River
Bales Creek	Middle Yaquina River	17100204-0102	Upper Yaquina River

The dominant geology type of the Siletz Reservation is Tyee sandstone. The Tyee formation consists of sedimentary rock formed from sands and silts deposited on the continental shelf during the middle Eocene. These sandstones and siltstones weather relatively easily to form fine-textured soils. Weathering of the basaltic intrusions associated with the Tyee formation provides gravel to the basin streams. The watersheds in the southern portion of the Siletz basin and the Yaquina basin are least susceptible to shallow landslide/erodible soil combinations. This finding does not negate the fact that landslides can occur in the action area, only that the area where harvesting would occur is of less susceptibility to landslides than other potential harvesting sites in the Coast Range.

OC coho salmon use in the action area includes spawning, rearing, and migration. The only proposed harvest unit beside coho salmon habitat (South Fork Mill Creek) is South Fork #3. Timber hauling would occur beside or cross numerous other streams containing coho salmon habitat.

The Siletz River from river mile 7 to 46.8 is listed on the Clean Water Act 303(d) list for exceeding temperature standard during the summer (ODEQ 2002). A portion of the 303(d)-listed Siletz River flows through the Scott Creek (REO: Sam Creek) 6th field watershed. The Yaquina River from river mile 15.4 to 27.6 is listed on the 303(d) list for exceeding the summer temperature standard and dissolved oxygen (DO) year round (ODEQ 2002). The Yaquina harvest unit is approximately 7 river miles upstream of the temperature-listed portion and is immediately upslope of the DO-listed portion.

The 6th field watersheds of Rock Creek (REO: Big Rock Creek) and Little Rock Creek are considered "at risk to not properly functioning" because they have 25 to 60% shading of the stream channel (Rock Creek) and 60 to 70% shading of the stream channel (Little Rock Creek). No data is available for Upper Yaquina watershed (Garono and Brophy 2001, as cited in the BA).

Rock Creek, below the Rock Creek #2 harvest unit, is considered at risk for turbidity due to livestock in close proximity to the stream on private lands.

Large woody debris is considered to be "at risk to properly functioning" for stream reaches within the harvest units. On a 6th field watershed scale, five of the six subwatersheds are considered "not properly functioning" for large woody debris. No data is available for Yaquina-Trout Creek (REO: Middle Yaquina River) subwatershed (Garono and Brophy 2001, as cited in the BA). The not properly functioning designation is given to streams that have less than 161 pieces per mile. Four of the five watersheds are considerably below this threshold: Cerine Creek (REO: Mill Creek) 42 pieces/mile, Scott Creek (REO: Sam Creek) 36 pieces/mile, Rock Creek (REO: Big Rock Creek) 12 pieces/mile, Little Rock Creek 72 pieces/mile. Bales Creek had the highest number of pieces per mile at 151.

Cerine Creek (REO: Mill Creek) subwatershed is considered "at risk" for percent pools with only 10 to 35% of the stream area in the watershed having sufficient number of pools for salmonids (Garono and Brophy 2001 as cited in the BA).

For the proposed harvest action areas, pool frequency and depth appear to be properly functioning based on field observations and professional judgement. On the 6th field watershed scale, pool complexity is considered to be "at risk" for Cerine Creek, Rock Creek, Little Rock Creek, and Bales Creek (REO: Mill Creek, Big Rock Creek, Little Rock Creek, and Middle Yaquina River). Scott Creek is considered to be properly functioning (Garono and Brophy, 2001 as cited in the BA).

CTSI determined that the stream flow indicator on tribal lands was properly functioning, and was not properly functioning on adjacent lands.

Road densities are considered "not properly functioning" for Cerine Creek, Scott Creek, and Little Rock Creek (REO: Mill Creek, Sam Creek, and Little Rock Creek) 6th field watersheds. They have densities of 3.31 miles/square mile, 3.43 miles/square mile, and 4.40 miles/square mile respectively. Rock Creek (REO: Big Rock Creek) (1.34 miles/square mile) and Yaquina-Trout Creek (REO: Middle Yaquina River) (1.89 miles/square mile) are both considered properly functioning (Garono and Brophy 2001, as cited in the BA).

Based on the best information available of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat, and ecosystem in the action area, the environmental baseline does not meet all of the biological requirements for OC coho salmon. Actions that promote or do not retard attainment of properly functioning aquatic conditions are necessary to meet the needs of the species, *i.e.*, survival and recovery of listed fish.

2.1.5 Analysis of Effects

In step 3 of NOAA Fisheries' analysis, we identify and evaluate the potential effects of the proposed action on the listed species with consideration of the existing environmental baseline in

the action area, including whether the proposed action contributes to or maintains a degraded baseline condition.

2.1.5.1 Effects of the Proposed Action

Logging operations, including roads, have the potential to adversely affect upland and riparian ecological functions and characteristics that shape aquatic habitat (Gregory *et al*. 1987, Chamberlin *et al*.1991). These functions and characteristics include provision of shade and cover, nutrient processing, food web support, sediment routing and composition, stream channel form, bank stability, water quality, flow timing and volume, and linkages to the floodplain (Sullivan *et al*. 1987, Gregory *et al*. 1991, Spence *et al*. 1996). Headwater streams above anadromy also play an important role in watershed function by storing and routing sediment, and providing high quality water, large woody material (LWM), organic litter, and dissolved nutrients into the lower gradient fish-bearing streams (Sullivan *et al*. 1987, Murphy 1995, Spence *et al*. 1996, Parkyn *et al*. 2003).

Under the Harvest Plan, the CTSI propose to clearcut harvest 413 acres of tribal lands over an 8-year period (Table 1). Timber harvests would be temporally and spatially well-distributed (Table 2). Only one harvest unit (63 acres) is beside known coho salmon habitat. The proposed project design criteria are expected to minimize effects to stream channel structure and quality, but not wholly avoid them. Similarly, the spatial separation of most harvest units from coho salmon habitat are expected to further ameliorate adverse effects.

Water Temperature

Stream shade (important for controlling water temperature) can be affected by logging within a distance equal to approximately three-quarters of a site potential tree height (SPTH) (FEMAT 1993, Spence *et al*. 1996). For small streams, the riparian buffer width needed to provide 75 to 90% shade varies widely, from 30 to 145 feet (Beschta *et al*. 1987). Roads built near watercourses can eliminate part of the riparian vegetation (Furniss *et al.* 1991), reducing stream channel shade.

No-cut buffers of 150 feet beside coho salmon habitat, 100 feet along other fish-bearing perennial streams, and 50 feet on non-fish-bearing perennial streams should minimize reductions in channel shade, though not avoid them entirely. Tree removal within 150 feet (75% SPTH) of streambanks may affect water temperature downstream in coho salmon habitat depending on site conditions (*e.g.*, downstream shading, distance to habitat, groundwater sources). Since small streams have a greater proportion of surface area than larger streams, they may be at greater risk from increases in solar radiation (Chamberlin *et al*. 1991). On the other hand, small streams are more likely to be shaded by shrubs and small trees that grow back relatively quickly.

Trees felled for yarding corridors in the no-cut buffers would be allowed to be removed from the harvest unit. Maintaining a continuous buffer is very important. Perforating the streamside buffer compromises its effectiveness (Wenger 1999, Parkyn *et al*. 2003), and may increase stream channel insolation. While not wholly avoiding these effects, limiting corridors to 30-foot width,

100-foot spacing, and maintaining 80% existing shade conditions would minimize them. Allowing removal of buffer felled trees would not provide little incentive to minimize the number of corridors within the streamside buffers, mitigate for the reduction in LWM recruitment, or provide coarse woody debris to contain transport of upslope sediment.

NOAA Fisheries expects the proposed action may incrementally decrease channel shading, but not sufficiently to elevate water temperatures downstream in coho salmon habitat.

Large Woody Material

LWM is an important component of freshwater salmonid habitat. LWM regulates sediment and flow routing, influences stream channel complexity and stability, and provides hydraulic refugia and cover within stream systems (Bisson *et al*. 1987, Gregory *et al*. 1987, Hicks *et al*. 1991a, Sedell and Beschta 1991). LWM also plays a key role in retaining salmon carcasses (Cederholm and Peterson 1985), a major source of nitrogen and carbon in stream ecosystems (Bilby *et al*. 1996).

Forest management activities, including road construction, within a distance equal to one SPTH of streams have the potential to change the distribution, size, and abundance of LWM that is recruited from adjacent riparian areas and hill slopes (Hicks *et al*. 1991a, FEMAT 1993, Ralph *et al*. 1994, Murphy 1995, Spence *et al*. 1996). However, because LWM recruitment potential declines rapidly moving away from the stream, a buffer of 100 feet includes about 80 to 98% of streamside LWM recruitment potential, depending on stand age and other factors (McDade *et al*. 1990, Van Sickle and Gregory 1990). Additional wood can be recruited to fish-bearing streams from upslope and upstream areas through landslides and debris flows (McGarry 1994, Reeves *et al*. 1995). In some areas, wood transported in this manner may constitute up to 50% of the wood recruited to downstream reaches (McGarry 1994). McDade *et al*. (1990) could not account for 48% of the existing LWM pieces in a study of recruitment from streamside areas.

The Harvest Plan would allow tree harvest within 1 SPTH of stream channels, which would decrease future LWM recruitment to adjacent and downstream channels. Where stream channels have the hydrologic capacity or a debris torrent potential exists to transport wood, reductions in LWM downstream in coho salmon habitat are likely. The implementation of 50- to 100-foot buffers on perennial streams would ameliorate some of that effect, but not wholly avoid it. The use of 150-foot buffers beside coho salmon habitat would largely avoid significant reduction of LWM recruitment from adjacent stands. The use of 50-foot buffers along intermittent and ephemeral stream channels potentially capable of delivering debris torrents downstream to coho salmon bearing streams would assure some LWM would be contained in any debris torrent.

Clearcut logging without buffers along some intermittent and ephemeral streams would cause long-term deficiencies of in-channel wood. LWM in these headwater streams increases sediment retention by forming depositional areas and dissipating energy; retains non-woody organic matter, allowing it to be biologically processed before downstream export as dissolved and particulate nutrients; and delays surface water passage, allowing it to be cooled by mixing with ground water (Bisson *et al*. 1987).

Tree removal from stream crossing yarding corridors and the stream #30 road crossing would have limited and localized reductions in the LWM recruitment potential. Yarding corridors would retard the potential within the buffer approximately equivalent to the existing stand age (~80 to 130 years) if allowed to develop to maturity. Corridors would be 30 feet wide and 100 feet apart. Buffer trees retained within the 100 feet are expected to provide a majority (≥77%)[16] of the buffer's LWM potential. The stream crossing is within a 12-year old plantation stand. Aerial photographs suggest a stream buffer was not retained during the previous harvest, so the existing recruitment potential is very low on site. The permanent road construction would reduce that potential to zero for a limited reach equivalent to the road prism width.

NOAA Fisheries expects the proposed action would reduce LWM recruitment potential to stream channels upstream of anadromy, which is likely to reduce LWM recruitment in downstream coho salmon habitat, as well as indirect effects on sediment storage and flow routing.

Sediment

Log yarding and subsequent prescribed burning activities can increase soil exposure, runoff, and surface erosion (Chamberlin *et al*. 1991). The magnitude of effects depends on the degree of disturbance, slope, soil types, the time required for revegetation, and whether runoff can be concentrated by roads or other features. Increases in sediment supply beyond the transport capability of the stream can cause stream channel instability, aggradation, widening, loss of pools, and a reduction in gravel quality (Sullivan *et al*. 1987, Swanston 1991). For salmon, these changes can mean reduced spawning success when spawning areas are covered, eggs and fry are buried, food abundance is reduced, and over-wintering habitat is lost (Hicks *et al*. 1991a). Increases in suspended sediment can adversely affect filter-feeding macroinvertebrates and fish feeding. At concentrations of 53 to 92 parts per million (ppm) (24 hours) macroinvertebrate populations were reduced (Gammon 1970). Concentrations of 250 ppm (1 hour) caused a 95% reduction in feeding rates in juvenile coho salmon (Noggle 1978). Concentrations of 1200 ppm (96 hours) killed juvenile coho salmon (Noggle 1978). Concentrations of 53.5 ppm (12 hours) caused physiological stress and changes in behavior in coho salmon (Berg 1983).

Timber felling, yarding and site preparation would occur no closer than 50 feet from perennial and buffered intermittent/ephemeral stream channels and immediately beside unbuffered intermittent/ephemeral stream channels. Yarding and site preparation activities would cause ground disturbance. Riparian vegetation retards sediment delivery from hillslopes and decrease sediment supply to stream channels. Under most circumstances, a 100-foot buffer is sufficient to prevent delivery of sediment via un-channelized flow, and an absolute minimum width should be 30 feet (Wenger 1999). Perforating the streamside buffer for yarding corridors compromises its effectiveness (Wenger 1999, Parkyn *et al*. 2003), and may provide a conduit for sediment delivery to adjacent stream channels. "For maximum effectiveness, buffers must extend along all streams, including intermittent and ephemeral segments" (Wenger 1999).

[16] Assuming upslope harvest has occurred and given 130-foot stream length, minimum retention of 100-foot equals ~77% of 130 feet of stream length buffer. Wider spacing would increase that percentage.

Given the description of the action area that indicates the existence of steep slopes and without better knowledge of site specific conditions downslope of the harvest units (*e.g.*, vegetative condition, soil depth, slope), NOAA Fisheries believes that some potential exists for sediment to reach buffered stream channels downslope of harvest units via runoff primarily from ground disturbance. However, the lack of vegetative buffers and the proposed felling/yarding during the wet season, when soils are likely to be saturated and intermittent/ephemeral streams flowing, make the likelihood that sediment would enter unbuffered intermittent/ephemeral stream channels significantly more probable.

Sediment fate is dependent in part on the receiving channel type. Where colluvial headwater channels[17] exist downslope of harvest units, limited fluvial transport capacity exists. Sediment delivered to these channels may be stored for long periods of time (Montgomery and Buffington 1997). However, once the suspension threshold is reached or storage capacity exceeded, fine sediments may readily be transported long distances to lower gradient streams with deposition occurring where a transport reach[18] transitions to a response reach.[19] Colluvial channels are believe to be the dominant channel type beside the proposed harvest units.

Where cascade or step-pool stream channels[20] exist downslope of harvest units, rapid sediment transport is likely (Montgomery and Buffington 1997). Fine sediment in these channels is supply limited. Therefore, any sediment delivered directly from the harvest units or indirectly via colluvial channels upstream would likely be transported downstream to lower gradient, response reaches (*e.g.*, plane-bed, pool-riffle, dune-ripple channels).

Based on the limited information that stream channel gradients within and downstream of the subject harvest units are frequently very steep (maximum 64%), NOAA Fisheries assumes fine sediment entering stream channels from harvest units are reasonably likely to be delivered as suspended sediment to coho salmon habitat downstream and deposited in response reaches, which may contain spawning habitat. Delivery of sediment would likely coincide with peak flow periods when over-ground runoff and suspension of existing in-channel fine sediment is more probable. Peak flows in the action area typically occur between November and March based on

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[17] Colluvial stream channels are "small headwater streams at the tips of a channel network that flow over a colluvial valley fill and exhibit weak or ephemeral fluvial transport" (Montgomery and Buffington 1997).

[18] Transport reaches are characterized as having low sediment supply and high transport capacity, typically higher gradient streams (>3% slope) and smaller drainage area.

[19] Response reaches are characterized as having high sediment supply and low transport capacity, typically lower gradient streams (<3% slope) and larger drainage area.

[20] Cascade-type stream channels "generally occur on steep slopes, are narrowly confined by valley walls, and are characterized by longitudinally and laterally disorganized bed material typically consisting of cobbles and boulders". Step-pool type stream channels "generally associated with steep gradients, small width to depth ratios, and pronounced confinement by valley walls" (Montgomery and Buffington 1997).

U.S. Geological Survey (USGS) stream flow data.[21] Changes in suspended sediment and substrate character may affect coho salmon spawning, intragravel development, and juvenile rearing. The elevated potential for sediment delivery from harvest units due to surface erosion would begin on commencement of timber felling and extend for some short period of time (~2 to 3 years) after site preparation is completed, albeit the magnitude of any such delivery likely would decrease appreciably within 1 year after broadcast burning.

Construction of a road network can greatly accelerate erosion rates in a watershed (Haupt 1959, Swanson and Dryness 1975, Swanston and Swanson 1976, Beschta 1978, Gardner 1979). Cederholm *et al*. (1981) reported that the percentage of fine sediments in spawning gravels increased above natural levels when more than 2.5% of a basin area was covered by roads. Unpaved road surfaces continually erode fine sediments, adding significant amounts of sediment to streams (Reid and Dunne 1984, Swanston 1991). Roads and related ditch networks are often connected to streams, providing a direct conduit for sediment. Stream crossings of roads can also be a source of sedimentation, especially if they fail or become plugged with debris (Furniss *et al.* 1991, Murphy 1995).

The proposed action would construct 4.51 miles of new road over an 8-year period. The roads would incrementally increase the road density in the five subwatersheds. Regardless, new roads would increase road densities in three subwatersheds described as not properly functioning for that indicator (Table 9). Only one new road would be constructed in a valley bottom. In the Mill Creek subwatershed, a new road constructed for the North Fork #2 harvest unit would include a stream crossing 3,100 feet upstream of coho salmon habitat. This crossing would be designed to provide passage for a 500-year flow event. Sediment generated from road rehabilitation and construction would be minimized by limiting work to June 1 to October 31.

Although road density can be a useful indicator of landscape-scale disturbance, specific information on road location, design, use and maintenance is helpful to determining effects of particular actions. Under the proposed action, new roads would be along ridge-tops, outside of landslide-prone areas. Roads would be designed so that stream crossings are minimized, reducing erosion problems resulting from culvert fills and concentration of road drainage onto potentially unstable areas. Proposed roads would be relocated or re-engineered if unstable slopes or other unfavorable conditions are found during road design or construction.

Directing surface runoff away from unstable sidecast or fill material, re-establishing natural drainage patterns where possible, and executing follow-up inspections and corrections are important for successful road treatment programs (Harr and Nichols 1993). Cross drain spacing under Oregon Department of Forestry (ODF) road design guidelines (ODF 2000) may be

[21] Data from gage #14305500 on Siletz River at Siletz, Oregon, with a 97-year continuous record ranging from 1905-2002. Available at U.S. Geological Survey web site: http://nwis.waterdata.usgs.gov/or. Accessed on June 3, 2004.

insufficient. ODF recently proposed amending its forest practice rules to include the following[22]: "Where needed to protect water quality, as directed by the State Forester, operators shall place additional cross drainage structures on existing active roads within operation areas as per the requirements of OAR 629-625-330." Montgomery (1994) described simple procedures for determining required frequency of road drainage features (based on road drainage area and hill slope) needed to avoid concentration of runoff onto areas in a manner that could cause channel initiation and landslides.

Table 9. New Road Construction versus Road Density Baseline

Subwatershed		New Roads (miles)	Road Density (mi/sq mi)	Road Density Baseline Condition
(CTSI 6th field)	(REO 6th field)			
Cerine Creek	Mill Creek	2.03	3.31	Not properly functioning
Scott Creek	Sam Creek	1.26	3.43	Not properly functioning
Little Rock Creek	Little Rock Creek	0.38	4.40	Not properly functioning
Rock Creek	Big Creek	0.59	2.25	At risk
Bales Creek & Yaquina-Trout Creek	Middle Yaquina River	0.25	1.89	Properly functioning

Of the ten harvest units, three harvest units would limit hauling to the "dry season", June 1 to October 31. These are the Scott Creek South, Dry Creek, and Yaquina Creek harvest units. Precipitation records for Summit, Oregon, which is approximately 7.5 miles southeast of the Dry Creek harvest unit, indicate the probability of a 2-inch precipitation event at 2% or less for June 1 to October 1, and less than 5% in October.

Wet season hauling has a greater likelihood of contributing sediment to area streams. Seven harvest units would allow wet season hauling on a total of 26.4 miles of gravel road (Table 4). Of these, two harvest units (Scott Creek South and Rock Creek #2 South) have no stream crossings at all (3.6 miles of gravel road). The other five harvest units that allow wet season hauling would have a total of 19 stream crossings. Seven stream crossings occur directly over coho salmon habitat, all by way of bridges. Of the 12 remaining stream crossings, all culverts, eight are within 400 feet of coho salmon and four range from 1,500 to 3,600 feet upstream of coho salmon.

Project design criteria that include rocking the travel surface, the use of sediment traps at stream crossings, and suspension of operations including hauling when severe weather conditions warrant should reduce the magnitude of sediment delivered due to road use. CTSI described

[22] Oregon Secretary of State, Notice of Proposed Rulemaking Hearing, Oregon Department of Forestry, Protection Division, Administrative Rules Chapter Number 629, Salem, Oregon, April 24, 2002.

severe weather as "excessive rainfall (>2 inches in one day), snow, freeze/thaw cycles after prolonged freeze, high winds, or other combinations of events that are judged by CTSI to be detrimental to the road or unit soils." Data for Summit, Oregon, indicates that between September 15 to May 15 the single-day probability of a 2-inch precipitation event is less then 8%, with the greatest likelihood occurring from November through February.[23]

NOAA Fisheries expects the proposed action would increase sediment delivery to action area streams predominately via harvest unit activities (*e.g.*, felling, yarding, burning) upslope and beside unbuffered intermittent and ephemeral stream channels and hauling on unpaved roads.

Bank Stability

Removing trees in the zone where roots can extend to the streambank can affect bank stability (Beschta 1991). For mature conifers, this means up to approximately 30 feet from the stream or more in a channel migration zone.

Roads in riparian areas also may affect bank stability. The use of bank protection to stabilize streamside roads can accelerate stream velocities and cause bank erosion upstream or downstream of the hardened site. Where channel migration zones are present, riparian roads can constrain the natural migration of the stream channel and simplify aquatic habitats.

All perennial stream channels would contain a minimum 50-foot buffer, which should adequately maintain existing bank stability. Only one stream crossing is proposed. This is the reconstruction of an abandoned road that crosses stream #30 in the North Fork #2 harvest unit. Although, culverts can accelerate stream velocities that cause erosion and bank instability, this crossing is approximately 3,500 feet upstream of coho salmon.

NOAA Fisheries expects the proposed action would not adversely affect bank stability in coho salmon habitat.

Slope Stability

Recently-logged areas often experience an increased rate of landslides (Swanston and Swanson 1976, Sidle *et al*. 1985, Swanston 1991, ODF 1999, Montgomery *et al.* 2000). A likely reason for this increase is altered soil shear strength. Soil shear strength decreases as tree roots gradually decay over a period of 2 to 10 years (Ziemer 1981, Sidle *et al*. 1985). Landslides originating from harvested hillslopes, and that travel along harvested stream channels, will deliver primarily sediment rather than LWM to streams (Hicks *et al*. 1991a, Reeves *et al*. 1995). The rate and composition of landslides (Reeves *et al*. 1995), channel gradient and tributary junction angle (Benda and Cundy 1990), and the presence of mature trees in runout zones that can reduce debris flow runout distance (ODF 1999) are major factors determining effects of these events on fish habitat.

[23] Available at URL: www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?orsumm. Accessed on June 1, 2004.

On steep hills, road construction or improper maintenance can greatly increase landslide rates relative to undisturbed forest (Swanson and Dryness 1975, Swanston and Swanson 1976, Furniss *et al*. 1991, ODF 1999), delivering large pulses of sediment to streams. Increased sediment delivery can adversely modify stream channel morphology by filling pools and interstitial spaces used for salmonid holding and rearing, covering spawning gravels, and causing streams to become wider and shallower (Hicks *et al*. 1991a, Furniss *et al.* 1991).

The CTSI has completed a slope stability assessment for CTSI lands. The assessment used ODF's technical report on 1996 landslides (ODF 1999), a photo-based landslide occurrence survey of CTSI and surrounding lands, and the SHALSTAB slope stability model (Montgomery and Dietrich 1994). Assessment results suggested the SHALSTAB model was a poor predictor of landslide risk on CTSI lands. The BA states, "CTSI lands are not in the most unstable category in the Coast Range."

Even if CTSI lands are not the "most unstable" in the Coast Range, NOAA Fisheries continues to have concerns about slope stability in this area, particularly for concave slopes greater than 70%, and convex and planar slopes greater than 80%. Five harvest units contain slopes greater than 70%, although none exceed 80% (Table 10). Most steep slopes appear to be convex or planar and not concave in form. The exception to this is stream #7 in the Yaquina harvest unit, which appears to include a concave headwall greater than 70% slope. The headwall is approximately 700 feet upstream of coho salmon habitat (Yaquina River). CTSI determined a buffer was not warranted because a downstream road and railroad grade would contain any potential debris flow before reaching the Yaquina River. While the grade may contain a debris flow, downstream sediment delivery to the mainstem Yaquina River would likely occur in the event of a debris flow. At a lower probability, blockage of the stream crossing could cause the grade to be overtopped and fail. The failure of the stream crossing is thought to be unlikely considering the streams ephemeral nature. The only harvest unit beside coho salmon habitat (South Fork #3) does contain steep planar and convex slopes beside South Fork Mill Creek and three of its tributaries. The slopes (70 to 80% slope) are buffered and yarding corridors would not bisect the buffer protecting South Fork Mill Creek.

With the exception of the stream #7 headwall (Yaquina harvest unit), NOAA Fisheries is satisfied that the subject action would not significantly increase the risk of slope failure.

Table 10. Harvest Units with Slopes Greater than 70% Slope

Harvest Unit	Exceeding 70% slope (acres)	Nearest unit distance from coho habitat* (feet)	Subwatershed (REO 6th field)
North Fork #2	21	1,000	Mill Creek
Burbank #2	4	1,600	Mill Creek
South Fork #3	18	adjacent	Mill Creek
Rock Creek #2 North	6	1,300	Big Rock Creek
Yaquina	6	700	Middle Yaquina River

* Only indicates distance of unit boundary nearest to coho salmon habitat. Does not necessarily indicate distance of steep slope from coho salmon.

Hydrology

Tree harvest may alter flow patterns of area streams. Changes in flow timing and volume are most evident in small drainages and are more likely as the percent of area harvested increases (Jones and Grant 1996, Harr *et al.* 1975). Tree removal may increase or decrease low flows for several years following harvest due to changes in evapotranspiration (Ziemer 2000, Hicks *et al.* 1991b, Keppler and Ziemer 1990, Hall *et al.* 1987). In the rain-dominated watersheds of the coastal United States, changes in peak flows are most evident for high reoccurrence events (*e.g.*, <2.3-year reoccurrence interval) resulting from fall storms (Jones 2000, Ziemer 2000, Ziemer 1998, Harr *et al.* 1975). The ability to detect the effects of land management on peak flow changes appears to decrease with increasing magnitude of the runoff event (Jones 2000, Harr *et al.* 1975).

In the Pacific Coast region of the United States, a measurable annual water yield increase is not likely to occur until 25% of the catchment area has been harvested (Stednick 1996). Water yield changes after logging generally decrease with time and eventually disappear in about 20 to 30 years in western Oregon (Adams and Ringer 1994). These water yield changes come about as replanted stands begin to exhibit transpiration rates similar to that of the original stand. Using the CTSI delineations, young hydrologically impaired forests (0 to 30 year age class) range from 41.1% to 60.3% in the subject 6th field watersheds (Table 11), and therefore may already have altered flow patterns and are not properly functioning. The proposed action would increase the total area in this age class (0 to 30 year) for the subwatersheds 0.1% to 0.6% (Table 11). While low or peak flows may change in the local drainages as a result of the proposed action and hinder the attainment of a properly functioning hydrograph in the 6th field watersheds, these changes are not expected to be easily measured or of sufficient magnitude to elicit a significant physiological or behavioral response in coho salmon or result in significant geomorphological channel changes. The ability to detect any changes in flows would be further reduced at the 5th field watershed scales, although this has not been specifically analyzed.

Table 11. Stand Age Class in Harvest Plan Subwatersheds

Subwatershed		Pre-Harvest 0-30 Year Age Class (% area)	Post-Harvest 0-30 Year Age Class (% area)	Net Change (% area)
(CTSI 6th field)	(REO 6th field)*			
Cerine Creek	Mill Creek	41.1	41.6	+0.5
Scott Creek	Sam Creek	53.8	54.4	+0.6
Little Rock Creek	Little Rock Creek	43.1	43.2	+0.1
Rock Creek	Big Rock Creek	54.6	55.1	+0.5
Yaquina-Trout Creek	Middle Yaquina River	48.6	48.9	+0.3
Bales Creek	Middle Yaquina River	60.3	60.4	+0.1

* Area does not correspond exactly to CTSI subwatershed area.

Road networks can intercept, divert, and concentrate surface and subsurface water flows, thereby increasing the watershed's drainage network (Hauge *et al*. 1979, Furniss *et al.* 1991, Wemple *et al*. 1996). This can change peak and base stream flows and increase landslide rates. Stream crossings can restrict channel geometry and prevent or interfere with migration of adult and juvenile anadromous fish (Furniss *et al*. 1991).

With the exception of a road in the North Fork #2 harvest unit, all new roads are ridgetop roads that would be hydrological disconnected (*e.g*., outsloped, cross drains) to the stream network. The road in the North Fork #2 harvest unit would increase the drainage network. The drainage area for stream #30 is approximately 10 acres dominated by a 12-year old plantation stand, which suggests stream flows are modified from the natural hydrograph and are not properly functioning. Approximately 6,000 square feet (0.14 acre) of reconstructed road would drain to stream #30. While likely to locally affect stream flow, any change in flow is not likely to result in an effect on coho salmon approximately 3,500 feet downstream. The 1st order stream discharges to a 2nd order stream along with at least five other 1st order tributaries before reaching coho salmon in the North Fork Mill Creek, which would ameliorate any flow effect.

NOAA Fisheries expects the proposed action would incrementally increase stream flows beside harvest units and at the stream #30 road crossing, but does not expect these changes to appreciably affect coho salmon downstream.

Summary of Project Effects

The proposed Harvest Plan would likely adversely affect coho salmon. The delivery of sediment generated from timber yarding and site preparation beside unbuffered intermittent and ephemeral streams is likely to occur. The delivery of sediment generated from timber hauling on unpaved roads during wet conditions is likely to occur. Sediment delivery to area streams is likely to degrade local stream reach water quality, substrate character and pool volume in coho salmon habitat. Harvesting timber within 150 feet of streams may increase water temperatures, although

increases would likely be small and may not be reflected downstream in coho salmon habitat. Harvesting timber within 200 feet of stream channels are likely to decrease future delivery of LWM to streams, particularly where harvest occurs along unbuffered, intermittent stream channels. Reductions of future LWM recruitment may adversely affect habitat complexity and quality beside harvest units and well downstream. Any debris flows potentially precipitated by timber harvest are not expected to reach coho salmon habitat. Localized hydrograph changes are likely, but the magnitude of such changes are not expected to appreciably affect coho salmon.

2.1.5.2 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." This is step 4 in NOAA Fisheries analysis process.

NOAA Fisheries is not aware of any specific future non-federal activities within the action area that would cause greater impacts to listed species than presently occurs. The action area includes significant tracts of private and state lands. Land use on these non-federal lands include timber production, agriculture, and rural and urban development. Chemical fertilizers or pesticides are used on many of these lands, but no specific information is available regarding their degree of use within the project area. Furthermore, NOAA Fisheries does not consider the rules governing these land uses on these non-federal lands within Oregon to be sufficiently protective of watershed, riparian, and stream habitat functions to support the survival and recovery of listed Pacific salmon species. Therefore, these habitat functions likely remain at risk due to future activities on non-federal lands within the affected river basins.

2.1.6 Conclusion

NOAA Fisheries has determined that, based on the available scientific and commercial data, BIA approval of the Harvest Plan of the CTSI is not likely to jeopardize the continued existence of OC coho salmon. In arriving at this determination, NOAA Fisheries considered the current status of the listed species, biological requirements for survival and recovery, environmental baseline conditions, the effects of the action, and the cumulative effects of actions anticipated in the action area. While likely to cause take, the proposed action is unlikely to appreciably reduce the likelihood of survival and recovery of OC coho salmon. In summary, our conclusion is based on the following considerations: (1) Harvest units are spatially and temporally distributed across four 5th field watersheds and 8 years; (2) only one unit would be harvested beside coho salmon habitat; (3) harvest beside coho salmon habitat would include a no-cut buffer equal to 75% of a SPTH;
(4) harvest units would avoid slopes greater than 80% slope; (5) in most instances, harvest would avoid concave slopes greater than 70% slope; (6) yarding corridors would be minimized and avoid crossing coho salmon habitat; (7) no-cut buffers would be implemented on perennial streams, and intermittent and ephemeral streams that could potentially deliver debris flows to coho habitat; (8) only five harvest units would require wet season timber hauling across streams;

(9) activities would be delayed or suspended when severe weather conditions occur; (10) wet season roads would be rocked; (11) most new roads would be placed on ridgetops; (12) the only new stream crossing is more than 3,000 feet upstream of coho salmon habitat and is capable of passing a 500-year flow event; (13) herbicide use is not proposed; and (14) roads would be maintained by the contractor during the period of the timber sale contract and by the CTSI following contract completion.

In recognition of the Federal government's trust responsibilities to Indian tribes, particularly as addressed in the Secretarial Order (Secretaries of Commerce and Interior) issued on June 5, 1997, NOAA Fisheries gives deference to tribal resource management plans when considering activities that affect natural resources under NOAA Fisheries' purview. This must be considered when NOAA Fisheries conducts its analyses and draws its conclusions regarding tribal natural resource management activities.

2.1.7 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species or to develop additional information.

The following conservation recommendations are consistent with these obligations, and therefore the BIA should encourage their implementation by the CTSI.

1. To minimize effects to water quantity and quality, conduct yarding within areas likely to deliver sediment to coho salmon habitat due to site-specific conditions (*e.g.*, insufficient stream structure to retain fine sediments, steep slope or stream gradient, or unbuffered streams) between June 1 and October 1 of a given year.
2. To minimize effects on riparian function, retain on site any trees felled within the streamside buffer for yarding corridors and that portion of any tree inadvertently felled into a streamside buffer.
3. To minimize effects to water quantity and quality, follow the procedures described by Montgomery (1994) for determining the frequency of road drainage features needed to avoid concentration of runoff onto areas in a manner that could cause channel initiation and landslides.
4. To minimize effects to water quality, avoid timber hauling on unpaved roads with stream crossings for the period of November through February.
5. To minimize the risk of debris flows, harvest of concave slopes greater than 70% should be avoided.
6. To minimize effects to the hydrograph, stream shade, bank stability, sediment transport, and wood recruitment, a no-cut buffer should be provided along ephemeral and intermittent stream channels.

7. To minimize effects to riparian functions, harvest prescriptions outside of the no-cut streamside buffers (*i.e.*, 100 and 150 feet) to a distance equal to one SPTH (200 feet) of perennial, fish-bearing streams should include retention of no fewer than 20 dominant or co-dominant conifer trees (if available) per acre.
8. To better understand baseline conditions in managed watersheds, the CTSI should continue their temperature monitoring program.
9. To plan activities to avoid adverse effects to listed species, the CTSI should begin surveys to clarify OC coho salmon spawning locations and times. This should be done on a trial basis first, in cooperation with NOAA Fisheries, to develop methods that will avoid unauthorized "take" of this listed species.
10. The CTSI should develop a monitoring program to determine the effectiveness of its riparian and upland strategies for maintaining and restoring fish habitat. As part of this program, the CTSI should develop assessment protocol for determining whether sediment transport from harvest units via unbuffered intermittent or ephemeral stream channels is occurring.

For NOAA Fisheries to be kept informed of actions minimizing or avoiding adverse effects, or those that benefit listed species or their habitat, NOAA Fisheries requests notification of the implementation of any conservation recommendation.

2.1.8 Reinitiation of Consultation

Consultation must be reinitiated if: (1) The amount or extent of taking specified in the incidental take statement is exceeded, or is expected to be exceeded; (2) new information reveals effects of the action may affect listed species in a way not previously considered; (3) the action is modified in a way that causes an effect on listed species that was not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

To reinitiate consultation, the BIA must contact the Habitat Conservation Division (Oregon State Habitat Office) of NOAA Fisheries at 525 NE Oregon Street, Suite 500, Portland, Oregon 97232-2778, and refer to NOAA Fisheries No.: **2003/01253**.

2.2 Incidental Take Statement

The ESA at section 9 [16 USC 1538] prohibits take of endangered species. The prohibition of take is extended to threatened anadromous salmonids by section 4(d) rule [50 CFR 223.203]. Take is defined by the statute as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." [16 USC 1532(19)] Harm is defined by regulation as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavior patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering." [50 CFR 222.102] Harass is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such

an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering." [50 CFR 17.3] Incidental take is defined as "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant." [50 CFR 402.02] The ESA at section 7(o)(2) removes the prohibition from any incidental taking that is in compliance with the terms and conditions specified in a section 7(b)(4) incidental take statement [16 USC 1536].

An incidental take statement specifies the effect of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize adverse effects and sets forth terms and conditions with which the action agency must comply to implement the reasonable and prudent measures. However, the incidental take statement included in this conference opinion does not become effective until NOAA Fisheries adopts this conference opinion as a biological opinion, after the listing is final. Until the time that the species is listed, the prohibitions of the ESA do not apply.

2.2.1 Amount or Extent of Take

NOAA Fisheries anticipates that the action covered by this Opinion is reasonably certain to result in incidental take of OC coho salmon from timber harvest and wet season road use. The amount of take in actions such as this are largely unquantifiable because take is in the form of harm, which includes habitat modification. Quantifying take associated with habitat modification is problematic because of the complexity of cause and effect relationships. Therefore, even though NOAA Fisheries expects some low level of incidental take to occur due to the actions covered by this Opinion, the best scientific and commercial data available are not sufficient to enable it to estimate a specific amount of incidental take to the species. In instances such as these, NOAA Fisheries designates the expected level of take in terms of the extent of take allowed.

For the proposed action, allowed take is limited to that associated with increased sediment and decreased LWM recruitment in those stream reaches identified below. Take that occurs from actions that exceed the range of effects analyzed in this Opinion, that do not follow the project design features, or that extend beyond the delineated take area is not authorized by this Opinion.

North Fork #2 Harvest Unit

- **North Fork Mill Creek**: South of the harvest unit downstream to the Mill Creek confluence.
- **Gunn Creek**: From the upstream extent of coho salmon presence downstream to the Mill Creek confluence.
- **Mill Creek**: Downstream of the North Fork Mill Creek confluence to the Cerine Creek confluence.

Burbank #2 Harvest Unit

- **South Fork Mill Creek**: From the upstream extent of coho salmon presence downstream to the western CTSI Reservation boundary.
- **Big Rock Creek**: From approximately river mile 0.8 to 1.2.

South Fork #3 Harvest Unit

- **South Fork Mill Creek**: From the upstream extent of coho salmon presence downstream to the North Fork Mill Creek confluence.
- **Cerine Creek**: From haul route stream crossing #13 downstream to the Mill Creek confluence.
- **Mill Creek**: Downstream of the haul route stream crossing to the Siletz River confluence at approximately river mile 48.9.

Scott Creek East Harvest Unit

- **Scott Creek**: From the upstream extent of coho salmon presence downstream to the Siletz River confluence at approximately river mile 45.5.

Scott Creek South Harvest Unit

- **Scott Creek**: From the upstream extent of coho salmon presence downstream to the Siletz River confluence at approximately river mile 45.5.

Scott Creek North Harvest Unit

- **Scott Creek**: From the upstream extent of coho salmon presence downstream to the Siletz River confluence at approximately river mile 45.5.

Dry Creek Harvest Unit

- **Stony Creek**: From upstream extent of coho salmon presence downstream to the Yaquina River at approximately river mile 38.1.
- **Brush Creek**: From the Dry Creek confluence downstream to the Big Rock Creek confluence at approximately Rock Creek stream mile 5.5.

Rock Creek #2 North Harvest Unit

- **Un-named tributary to Rock Creek at stream mile 2**: In its entirety.
- **Cerine Creek**: Downstream of haul route crossing #8 to the Mill Creek confluence.
- **Mill Creek**: Downstream of haul route crossing #7 to the Siletz River at approximately river mile 48.9.

Rock Creek #2 South Harvest Unit

- **Rock Creek**: From approximately stream mile 1.0 to 2.0.

Yaquina Harvest Unit

- **Hayes Creek**: From the upstream extent of coho salmon presence downstream to the Yaquina River at approximately river mile 29.2.
- **Yaquina River**: From approximately river mile 34.5 to 35.5.

2.2.2 Reasonable and Prudent Measures

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to avoid or minimize take of OC coho salmon resulting from implementation of this Opinion.

1. Minimize incidental take from the proposed Harvest Plan activities by implementing activities as presented to NOAA Fisheries.

2. Minimize the likelihood of incidental take resulting from adverse effects to water quality associated with the proposed Harvest Plan activities.

3. Minimize the likelihood of incidental take resulting from the alteration of aquatic and riparian habitat.

4. To ensure that activities are completed as described by the CTSI and in this Opinion, and that the protective measures are effective, provide annual reporting for the proposed activities.

2.2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the BIA must ensure CTSI compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. Implementation of the terms and conditions within this Opinion will further reduce the risk of adverse effects to OC coho salmon. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure # 1 (implementation), the BIA shall ensure that:

    a. Activities not included. The following activities were not included in this consultation.
        i. Construction of new roads and stream crossings other than those described.
        ii. Bank stabilization activities below the ordinary high-water (OHW) elevation, other than activities associated with stream #30 culvert installation.
        iii. Use of chemical herbicides, pesticides, fertilizers, and dust abatement.
        iv. Ground-based yarding (*e.g.*, tractor).
        v. Future timber harvest of regenerated stands, including pre-commercial and commercial thinning.

2. To implement reasonable and prudent measure # 2 (water quality), the BIA shall ensure that:

   a. Yarding.
      i. Yarding corridors in streamside buffers are limited in number and width.
      ii. Logs yarded over stream channels and within streamside buffers are fully suspended.
      iii. Landings are not within 150 feet of stream channels.
   b. Landslides. Roads are not on areas with a high risk of slope failure that may contribute sediment to coho salmon habitat.
   c. Ditch cleaning. Disturbance of existing vegetation in ditches and at stream crossings is minimized to the greatest extent possible.
   d. Cross drains. Cross drains are designed and placed to discharge onto stable slopes.
   e. Hauling. Timber hauling is avoided when road conditions will generate excessive sediment, such as during intense or prolonged rainfall, or when the road surface begins to deteriorate as evidenced by the increasing presence of surface mud, rutting, ponding, *etc.*
   f. Erosion control.
      i. Erosion control measures are implemented to minimize sediment delivery sources (*e.g.*, rock check dams, silt fence, hay bales).
      ii. Soils disturbed within 50 feet of fish-bearing and 25 feet of non-fish-bearing perennial streams as part of implementing the Harvest Plan are planted with native grass seed. This may be limited to the stream #30 road crossing, but is relevant to any other soil disturbance that results from implementing the Harvest Plan (e.g., soil disturbance within yarding corridors meeting the above criteria).
   g. Heavy Equipment. Equipment must be fueled, operated, maintained, and stored as follows.
      i. Vehicle staging, cleaning, maintenance, refueling, and fuel storage must take place 150 feet or more from any stream, waterbody or wetland.
      ii. All vehicles operated within 150 feet of any stream, waterbody or wetland must be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected must be repaired 150 feet or more from any stream, waterbody or wetland before the vehicle resumes operation.
      iii. No equipment will be operated below the bankfull elevation. During construction of the stream #30 road crossing, equipment will be operated from the top of bank and in-stream use (*e.g.*, bucket) will be minimized.
   h. Material disposal. Landslide and excavated waste materials are disposed of in stable, non-floodplain sites. Provide erosion control to minimize sediment delivery to streams.
   i. Water withdrawals. Water withdrawals completed in association with the proposed action (*e.g.*, dust abatement, prescribe fire control) meet the following conditions.

i. Only temporary, limited time period per day (*i.e.*, 4 hours) water withdrawals are authorized.
ii. Preferentially select non-fish-bearing sources when available.
iii. Have a fish screen installed, operated and maintained in accordance to NOAA Fisheries' fish screen criteria (NOAA Fisheries 2001) (http://swr.nmfs.noaa.gov/hcd/WaterDrafting-02.htm) on any intake structure used in waters potentially containing coho salmon, including:
    (1) Ensure adequate velocity distribution by using internal baffling for the screens.
    (2) Screen material openings:
        (a) Circular screen face openings shall not exceed 3/32 inch in diameter. Perforated plate openings shall be punched through in the direction of flow.
        (b) Slotted screen face openings shall not exceed 1.75 mm (approximately 1/16 inch) in the narrow direction.
        (c) Square screen face openings shall not exceed 3/32 inch on a side.
    (3) Limit approach velocities to less than 0.33 feet per second. Q=VA. Where Q equals flow in cubic feet per second, V equals the approach velocity (0.33 fps), and A equals the screen area in square feet.
iv. If streams with less than 5 cubic feet per second (cfs) are used for water withdrawal:
    (1) No more than 18,000 gallons will be removed in one day.
    (2) No more than one pump will operate at one time at any one withdrawal site.
v. No water will be drafted from sites where adult coho salmon are visibly present to prevent interference with spawning activities.
vi. If redds have been located downstream of withdrawal site, a CTSI fish biologist will ensure withdrawal will not have adverse effects to eggs or emergent alevins.

3. To implement reasonable and prudent measure # 3 (habitat alteration), the BIA shall ensure that:

a. <u>Stream #30 road crossing</u>. Stream #30 road crossing is designed and constructed as follows.
    i. Design roadway to cross stream channel as near as perpendicular as possible.
    ii. Use culvert capable of passing a 500-year flow event.
    iii. Limit work within stream channel to between July 1 and August 31.
    iv. Place stream channel culvert in such a manner as to minimize scour and erosion.
    v. Minimize the volume of fill material used.

vi. Construct and maintain crossing to prevent diversion of streamflow out of the channel and down the road in the event of crossing failure (*e.g.*, dip and harden crossing).

vii. Minimize road drainage area discharging to stream (*e.g.*, install cross drains to limit travel surface area draining to stream channel).

b. Streamside buffers.

i. The number of trees felled within the streamside buffer for yarding corridors is minimized.

ii. The cutting of larger diameter conifers are preferentially avoided when siting yarding corridors within the streamside buffer.

iii. Trees felled within the streamside buffer that are to be yarded are not felled across streams.

4. To implement reasonable and prudent measure # 4 (reporting), the BIA shall ensure that:

a. Annual notification. Each year, notify NOAA Fisheries of scope of work to be completed under the Harvest Plan for the coming calendar year. Notification reports are due by **October 31** of the year before conducting the indicated activities, unless otherwise authorized in writing by NOAA Fisheries before that date. An exception is granted for 2004 activities, which must be reported within 60 days of issuance of this Opinion.

b. Activity completion reporting. A report is completed annually of all Harvest Plan activities conducted within the preceding calendar year. Activity reports will be submitted by **February 28**, unless otherwise authorized in writing by NOAA Fisheries before that date.

c. Effectiveness monitoring reporting. An effectiveness monitoring report is completed and submitted annually by **February 28** covering the previous calendar year's monitoring, unless otherwise authorized in writing by NOAA Fisheries before that date. Monitoring will include at a minimum all of the following:

i. Number of acres harvested by sub-watershed. Applies to acres harvested during the preceding year.

ii. Number of green trees retained within harvest unit. Applies to units harvested during the preceding year.

iii. For yarding corridors constructed that cross stream channels, identify number of yarding corridors, the stream channel crossed, whether intermittent or perennial, number of trees by species cut within buffer to facilitate yarding, and number of trees removed from buffer. Applies to corridors constructed during the preceding year.

iv. Post-harvest measurement of minimum streamside buffer widths, excluding yarding corridors. Applies to each unit harvested during the preceding year.

v. Where no buffer was used, identify stream and stream length not buffered. Applies to units harvested during the preceding year.

vi. Any incidences of trees felled into the streamside buffer or wind throw loss in a stream buffer during the preceding year and their location. Applies to any new event not previously reported.

vii. Examine harvest units and adjacent streambanks for any landslides or excessive soil movements. Applies to any new event not previously reported.

viii. On Reservation lands, examine streams for any debris flows. Determine the origin, runout distance, and composition of any observed debris flow. Applies to any new event not previously reported.

ix. Identify haul route used, period hauling occurred, number of unpaved road miles hauled on, number of stream channels crossed, and number of truck loads hauled from harvest unit. Applies to any timber hauling during the preceding year.

x. Occurrence of any work suspensions due to adverse weather conditions. Applies to any new event not previously reported.

xi. Examine stream crossings along active haul routes for sediment delivery. Determine the downstream extent of any observed increase in stream turbidity below crossing.

xii. Report any other occurrence of excessive damage to soil, vegetation, streambanks, or stream channels from felling, yarding, soil compaction, roads, or prescribed burning.

xiii. Supporting documentation will include photographs as necessary to assist in conveying monitoring information.

d. Submission of reports. Monitoring reports will be submitted to:

Director, Oregon State Habitat Office
Habitat Conservation Division
National Marine Fisheries Service
Attn: 2003/01253
525 NE Oregon Street
Portland, OR 97232

i. Annual activity reporting will terminate following the reporting of final Harvest Plan activities, estimate year 2011.

ii. Effectiveness monitoring reports will terminate 3 years following completion of the last activity, estimate year 2014.

iii. Within 30 days of receipt of the annual activity and monitoring reports, CTSI staff will work with NOAA Fisheries to schedule a meeting to review the submitted reports and conduct site visits. The need for such a meeting will be at NOAA Fisheries' discretion.

iv. Failure to provide reports may cause the incidental take statement to expire. If the CTSI fails to provide specified reporting information by the required date, NOAA Fisheries may consider that a modification of the action that

causes an effect on listed species not previously considered and cause the Incidental Take Statement to expire.

e. Salvage notice. The following notice is included as a reporting requirement:

> NOTICE. If a sick, injured or dead specimen of a threatened or endangered species is found, the finder must notify the Vancouver Field Office of NOAA Fisheries Law Enforcement at 360.418.4246. The finder must take care in handling of sick or injured specimens to ensure effective treatment, and in handling dead specimens to preserve biological material in the best possible condition for later analysis of cause of death. The finder also has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not disturbed unnecessarily. "Spawned-out" adult salmon are excluded from this reporting requirement.

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

3.1 Background

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Pursuant to the MSA:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (§305(b)(2)).
- NOAA Fisheries must provide conservation recommendations for any Federal or state action that would adversely affect EFH (§305(b)(4)(A)).
- Federal agencies must provide a detailed response in writing to NOAA Fisheries within 30 days after receiving EFH conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with NOAA Fisheries EFH conservation recommendations, the Federal agency must explain its reasons for not following the recommendations (§305(b)(4)(B)).

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting this definition of EFH: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological

communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.10). Adverse effect means any impact which reduces quality and/or quantity of EFH, and may include direct (*e.g.*, contamination or physical disruption), indirect (*e.g*., loss of prey or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

EFH consultation with NOAA Fisheries is required regarding any Federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities.

The objectives of this EFH consultation are to determine whether the proposed action would adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH.

3.2 Identification of Essential Fish Habitat

Pursuant to the MSA the Pacific Fisheries Management Council (PFMC) has designated EFH for three species of federally-managed Pacific salmon: Chinook, coho, and Puget Sound pink (*O. gorbuscha*) salmon (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC 1999), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based, in part, on this information.

3.3 Proposed Actions

The proposed action and action area are detailed above in sections 1.2 and 2.1.4 of this Opinion. The action area includes habitats that have been designated as EFH for various life-history stages of coho and Chinook salmon.

3.4 Effects of Proposed Action

As described in detail in section 2.1.5.1 of this Opinion, the proposed action may result in short- and long-term adverse effects to a variety of habitat parameters. These adverse effects are:

1. Sediment delivery to streams will adversely affect water and substrate quality.
2. Sediment delivery to streams may reduce pool volume.
3. Harvest within the riparian zone may reduce stream shade, increase water temperatures and decrease wood recruitment to streams.
4. Harvest may contribute to an altered hydrograph.

3.5 Conclusion

NOAA Fisheries concludes that the proposed action will adversely affect designated EFH for coho and Chinook salmon.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations to Federal agencies regarding actions that may adversely affect EFH. Although NOAA Fisheries assumes that the conservation measures described in the BA will be implemented by the BIA, these measures likely are not sufficient to address the adverse impacts to EFH described above. However, the conservation recommendations outlined in section 2.1.7 and the terms and conditions outlined in section 2.2.3 are generally applicable to designated EFH for coho and Chinook salmon, and address these adverse effects. Consequently, NOAA Fisheries recommends that with the exception of term and condition #4 (reporting) that they be adopted as EFH conservation measures.

3.7 Statutory Response Requirement

Pursuant to the MSA (§305(b)(4)(B)) and 50 CFR 600.920(j), Federal agencies are required to provide a detailed written response to NOAA Fisheries' EFH conservation recommendations within 30 days of receipt of these recommendations. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. In the case of a response that is inconsistent with the EFH conservation recommendations, the response must explain the reasons for not following the recommendations, including the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

3.8 Supplemental Consultation

The BIA must reinitiate EFH consultation with NOAA Fisheries if the proposed action is substantially revised in a manner that may adversely affect EFH, or if new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920(k)).

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Section 7(a)(2) of the ESA requires Opinions to be based on the best scientific and commercial data available. This section identifies the data used in developing this Opinion.

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